

FINAL
RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
*Radiological Surveys of Buildings and Ground Surfaces, and
Storm Drain and Sanitary Sewer Removal
Parcel D-1, Phase 1
Hunters Point Naval Shipyard
San Francisco, California*

*Contract Number: N62473-08-D-8822
Task Order: 0006*

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Submitted to:



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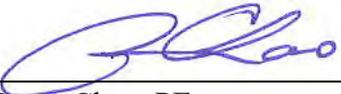
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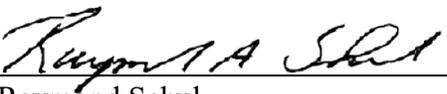
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Table of Contents

List of Figures	viii
List of Tables	viii
List of Appendices	viii
Acronyms and Abbreviations	ix
1.0 Introduction	1-1
1.1 Hunters Point Naval Shipyard Location and Description	1-4
1.2 Parcel D-1 Site Description	1-4
1.3 Current and Future Land Use	1-5
1.4 Project Schedule	1-6
1.5 Report Organization	1-6
2.0 Background.....	2-1
2.1 History	2-1
2.2 Conceptual Site Model	2-2
2.3 Removal Action Objectives and Remediation Goals	2-3
2.4 Supporting Documents Summary.....	2-4
2.4.1 Final Execution Plan for the Parcel D-1 Radiological Remediation and Support.....	2-4
2.4.2 Parcel D-1 Radiological Work Plan.....	2-5
2.4.3 Project Work Plan, Parcel D-1 Storm Drain and Sanitary Sewer Removal.....	2-6
2.4.4 Design Plan for the Parcel D-1 Sanitary Sewer and Storm Drain Removal.....	2-7
2.4.5 Demolition Plan for the Gun Mole Pier and South Pier Buildings	2-8
2.4.6 Final Task-Specific Plan Building 274	2-8
2.4.7 Final Task-Specific Plan Building 383 Area.....	2-8
2.4.8 Final Task-Specific Plan Former Building 313, 313A, and 322 Sites.....	2-8
2.4.9 Final Task-Specific Plan South Pier Area Scoping Survey.....	2-9
2.4.10 Final Task-Specific Plan Addendum South Pier Area Scoping Survey.....	2-9
2.4.11 Final Task-Specific Plan Gun Mole Pier Area Scoping Survey.....	2-9
2.4.12 Final Task-Specific Plan Addendum Gun Mole Pier Area Scoping Survey	2-10
2.4.13 Final Survey Unit Project Reports Abstracts.....	2-10
2.4.14 Survey Unit Project Report.....	2-11
3.0 Parcel D-1 Field Activities Overview	3-1
3.1 Radiological Surveys of Buildings and Ground Surfaces.....	3-1
3.1.1 Survey Design	3-1
3.1.2 Unrestricted Radiological Release Criteria	3-2
3.1.3 Investigation Levels	3-3
3.1.4 Survey Procedures	3-3
3.1.5 Dose and Risk Modeling.....	3-5
3.1.6 As Low As Reasonably Achievable	3-6
3.2 Removal of Storm Drain and Sanitary Sewer System	3-8
3.2.1 Pre-Excavation Field Activities	3-9
3.2.1.1 Pre-Mobilization Conferences.....	3-9
3.2.1.2 Utility Survey	3-9
3.2.1.3 Initial Topographical Survey.....	3-9

Table of Contents (continued)

	3.2.1.4	Initial Radiological Surface Screening.....	3-9
	3.2.1.5	Site Support Area and Preparation	3-10
	3.2.1.6	Mobilization	3-10
	3.2.1.7	Stormwater and Erosion Control	3-10
	3.2.1.8	Fugitive Dust.....	3-11
	3.2.1.9	Air Monitoring.....	3-12
	3.2.2	Storm Drain and Sanitary Sewer Excavation.....	3-12
	3.2.2.1	Excavated Soil	3-13
	3.2.2.2	Excavated Soil Radiological Processing	3-13
	3.2.3	Storm Drain and Sanitary Sewer Systems Piping.....	3-14
	3.2.3.1	Pipe and Manhole Radiological Surveys.....	3-15
	3.2.3.2	Pipe and Manhole Sediments	3-15
	3.2.4	Extraneous Pipe	3-15
	3.2.5	Piping Remaining in Place.....	3-16
	3.2.6	Storm Drain and Sanitary Sewer Trenches	3-16
	3.2.6.1	Trench Survey Activities.....	3-18
	3.2.6.2	Trench Survey Unit Remediation Activities	3-19
	3.2.6.3	Trench Survey Unit Final Status Survey Activities	3-19
	3.2.7	Trench Survey Unit Dose and Risk Modeling	3-20
	3.2.8	As Low As Reasonably Achievable	3-20
	3.2.9	Import Fill.....	3-21
	3.3	Worker Health and Safety	3-21
4.0		Work Area 24.....	4-1
	4.1	Trench Survey Unit 250.....	4-1
	4.1.1	Removal Action Activities	4-1
	4.1.2	Piping Remaining in Place.....	4-3
	4.1.3	Final Status Survey Summary	4-3
	4.1.4	Backfill Activities.....	4-5
	4.2	Trench Survey Unit 251.....	4-5
	4.2.1	Removal Action Activities	4-5
	4.2.2	Piping Remaining in Place.....	4-6
	4.2.3	Final Status Survey Summary	4-6
	4.2.4	Backfill Activities.....	4-7
	4.3	Trench Survey Unit 252.....	4-7
	4.3.1	Removal Action Activities	4-8
	4.3.2	Piping Remaining in Place.....	4-9
	4.3.3	Final Status Survey Summary	4-9
	4.3.4	Backfill Activities.....	4-10
	4.4	Trench Survey Unit 253.....	4-11
	4.4.1	Removal Action Activities	4-11
	4.4.2	Piping Remaining in Place.....	4-14
	4.4.3	Final Status Survey Summary	4-14
	4.4.4	Backfill Activities.....	4-16

Table of Contents (continued)

4.5	Trench Survey Unit 254.....	4-16
4.5.1	Removal Action Activities	4-16
4.5.2	Piping Remaining in Place.....	4-23
4.5.3	Final Status Survey Summary	4-23
4.5.4	Backfill Activities	4-25
4.6	Trench Survey Unit 255.....	4-25
4.6.1	Removal Action Activities	4-25
4.6.2	Piping Remaining in Place.....	4-27
4.6.3	Final Status Survey Summary	4-27
4.6.4	Backfill Activities	4-28
4.7	Trench Survey Unit 256.....	4-29
4.7.1	Removal Action Activities	4-29
4.7.2	Piping Remaining in Place.....	4-29
4.7.3	Final Status Survey Summary	4-29
4.7.4	Backfill Activities	4-31
4.8	Trench Survey Unit 257.....	4-31
4.8.1	Removal Action Activities	4-31
4.8.2	Piping Remaining in Place.....	4-33
4.8.3	Final Status Survey Summary	4-33
4.8.4	Backfill Activities	4-34
4.9	Trench Survey Unit 259.....	4-35
4.9.1	Removal Action Activities	4-35
4.9.2	Piping Remaining in Place.....	4-36
4.9.3	Final Status Survey Summary	4-36
4.9.4	Backfill Activities	4-38
4.10	Trench Survey Unit 261.....	4-38
4.10.1	Removal Action Activities	4-39
4.10.2	Piping Remaining in Place.....	4-39
4.10.3	Final Status Survey Summary	4-39
4.10.4	Backfill Activities	4-41
4.11	Trench Survey Unit 264.....	4-41
4.11.1	Removal Action Activities	4-41
4.11.2	Piping Remaining in Place.....	4-42
4.11.3	Final Status Survey Summary	4-42
4.11.4	Backfill Activities	4-44
4.12	Trench Survey Unit 265.....	4-44
4.12.1	Removal Action Activities	4-44
4.12.2	Piping Remaining in Place.....	4-49
4.12.3	Final Status Survey Summary	4-49
4.12.4	Backfill Activities	4-51
4.13	Trench Survey Unit 272.....	4-51
4.13.1	Removal Action Activities	4-51
4.13.2	Piping Remaining in Place.....	4-52

Table of Contents (continued)

4.13.3	Final Status Survey Summary	4-52
4.13.4	Backfill Activities	4-53
4.14	Trench Survey Unit 273.....	4-54
4.14.1	Removal Action Activities	4-54
4.14.2	Piping Remaining in Place.....	4-54
4.14.3	Final Status Survey Summary	4-55
4.14.4	Backfill Activities	4-56
4.15	Trench Survey Unit 274.....	4-56
4.15.1	Removal Action Activities	4-56
4.15.2	Piping Remaining in Place.....	4-57
4.15.3	Final Status Survey Summary	4-57
4.15.4	Backfill Activities	4-59
4.16	Trench Survey Unit 277	4-59
4.16.1	Removal Action Activities	4-59
4.16.2	Piping Remaining in Place.....	4-60
4.16.3	Final Status Survey Summary	4-60
4.16.4	Backfill Activities	4-61
4.17	Former Building 313,313A, and 322 Sites	4-62
4.17.1	Description and Background	4-62
4.17.2	Final Status Survey Summary	4-62
4.17.3	Regulatory Concurrence.....	4-64
4.18	Building 274.....	4-64
4.18.1	Description and Background	4-64
4.18.2	Final Status Survey Summary	4-65
4.18.3	Regulatory Concurrence.....	4-66
5.0	Work Area 25.....	5-1
5.1	Trench Survey Unit 283.....	5-1
5.1.1	Removal Action Activities	5-1
5.1.2	Piping Remaining in Place.....	5-2
5.1.3	Final Status Survey Summary	5-2
5.1.4	Backfill Activities	5-3
6.0	Work Area 28.....	6-1
6.1	Trench Survey Unit 258.....	6-1
6.1.1	Removal Action Activities	6-1
6.1.2	Piping Remaining in Place.....	6-1
6.1.3	Final Status Survey Summary	6-2
6.1.4	Backfill Activities	6-3
6.2	Trench Survey Unit 262.....	6-3
6.2.1	Removal Action Activities	6-4
6.2.2	Piping Remaining in Place.....	6-4
6.2.3	Final Status Survey Summary	6-4
6.2.4	Backfill Activities	6-6

Table of Contents (continued)

6.3	Trench Survey Unit 270.....	6-6
6.3.1	Removal Action Activities	6-6
6.3.2	Piping Remaining in Place.....	6-7
6.3.3	Final Status Survey Summary	6-7
6.3.4	Backfill Activities	6-9
6.4	Trench Survey Unit 271.....	6-9
6.4.1	Removal Action Activities	6-9
6.4.2	Piping Remaining in Place.....	6-9
6.4.3	Final Status Survey Summary	6-10
6.4.4	Backfill Activities	6-11
6.5	Trench Survey Unit 276.....	6-11
6.5.1	Removal Action Activities	6-12
6.5.2	Piping Remaining in Place.....	6-12
6.5.3	Final Status Survey Summary	6-12
6.5.4	Backfill Activities	6-14
6.6	Trench Survey Unit 278.....	6-14
6.6.1	Removal Action Activities	6-14
6.6.2	Piping Remaining in Place.....	6-16
6.6.3	Final Status Survey Summary	6-16
6.6.4	278 Backfill Activities.....	6-18
6.7	Trench Survey Unit 279.....	6-18
6.7.1	Removal Action Activities	6-18
6.7.2	Piping Remaining in Place.....	6-19
6.7.3	Final Status Survey Summary	6-19
6.7.4	Backfill Activities	6-21
6.8	Trench Survey Unit 280.....	6-21
6.8.1	Removal Action Activities	6-21
6.8.2	Piping Remaining in Place.....	6-22
6.8.3	Final Status Survey Summary	6-22
6.8.4	Backfill Activities	6-23
6.9	Trench Survey Unit 281.....	6-24
6.9.1	Removal Action Activities	6-24
6.9.2	Piping Remaining in Place.....	6-24
6.9.3	Final Status Survey Summary	6-24
6.9.4	Backfill Activities	6-26
6.10	Trench Survey Unit 282.....	6-26
6.10.1	Removal Action Activities	6-26
6.10.2	Piping Remaining in Place.....	6-26
6.10.3	Final Status Survey Summary	6-26
6.10.4	Backfill Activities	6-28

Table of Contents (continued)

6.11	Building 383.....	6-28
	6.11.1 Description and Background	6-28
	6.11.2 Final Status Survey Summary	6-29
	6.11.3 Regulatory Concurrence.....	6-30
6.12	Gun Mole Pier	6-30
	6.12.1 Description and Background	6-30
	6.12.2 Final Status Survey Summary	6-32
	6.12.3 Regulatory Concurrence.....	6-33
7.0	Work Area 29.....	7-1
7.1	Trench Survey Unit 266.....	7-1
	7.1.1 Removal Action Activities	7-1
	7.1.2 Piping Remaining in Place.....	7-3
	7.1.3 Final Status Survey Summary	7-3
	7.1.4 Backfill Activities.....	7-4
7.2	Trench Survey Unit 267.....	7-5
	7.2.1 Removal Action Activities	7-5
	7.2.2 Piping Remaining in Place.....	7-6
	7.2.3 Final Status Survey Summary	7-6
	7.2.4 Backfill Activities.....	7-7
7.3	Trench Survey Unit 268.....	7-7
	7.3.1 Removal Action Activities	7-8
	7.3.2 Piping Remaining in Place.....	7-8
	7.3.3 Final Status Survey Summary	7-8
	7.3.4 Backfill Activities.....	7-10
7.4	Trench Survey Unit 269.....	7-10
	7.4.1 Removal Action Activities	7-10
	7.4.2 Piping Remaining in Place.....	7-11
	7.4.3 Final Status Survey Summary	7-11
	7.4.4 Backfill Activities.....	7-12
7.5	Trench Survey Unit 275.....	7-13
	7.5.1 Removal Action Activities	7-13
	7.5.2 Piping Remaining in Place.....	7-14
	7.5.3 Final Status Survey Summary	7-14
	7.5.4 Backfill Activities.....	7-15
8.0	Work Area 30.....	8-1
8.1	Trench Survey Unit 260.....	8-1
	8.1.1 Removal Action Activities	8-1
	8.1.2 Piping Remaining in Place.....	8-2
	8.1.3 Final Status Survey Summary	8-3
	8.1.4 Backfill Activities.....	8-4
8.2	Trench Survey Unit 263.....	8-4
	8.2.1 Removal Action Activities	8-4
	8.2.2 Piping Remaining in Place.....	8-5

Table of Contents (continued)

	8.2.3	Final Status Survey Summary	8-5
	8.2.4	Backfill Activities	8-6
8.3		South Pier	8-7
	8.3.1	Description and Background	8-7
	8.3.2	Final Status Survey Summary	8-9
	8.3.3	Regulatory Concurrence	8-10
9.0		Site Restoration and Post-Construction Activities	9-1
	9.1	Backfilling and Compacting	9-1
	9.2	Asphalt Placement	9-1
	9.3	Temporary Swale Construction	9-2
	9.4	Demobilization	9-2
	9.5	Work Variances	9-3
	9.6	Completion Inspections	9-3
	9.6.1	Pre-Final Inspection	9-3
	9.6.2	Final Inspection	9-4
	9.7	Photographic Log	9-4
10.0		Community Relations	10-1
	10.1	Public Information	10-1
	10.2	Public Participation	10-1
11.0		Removal Action Costs	11-1
12.0		Conclusions and Recommendations	12-1
	12.1	Radiologically Impacted Buildings/Structures and Former Building Sites	12-1
	12.2	Storm Drain and Sanitary Sewer Systems Removal	12-2
	12.3	Recommendations	12-3
13.0		References	13-1

List of Figures

Figure 1	Hunters Point Naval Shipyard and Parcel D-1 Location Map
Figure 2	Parcel D-1 IR Sites and Work Areas
Figure 3	Project Schedule
Figure 4	Storm Drain and Sanitary Sewers in Parcel D-1
Figure 5	Trench Survey Units and Site Survey Units
Figure 6	Manseau Street Swale

List of Tables

Table 1	Radionuclides of Concern for Parcel D-1 Sites
Table 2	Radiological Release Criteria
Table 3	Release Criteria for Storm Drains and Sanitary Sewers
Table 4	Derived Airborne Concentration for Radionuclides of Concern
Table 5	Parcel D-1 Trench Survey Unit Data Summary
Table 6	Parcel D-1 Trench Survey Units and Associated Trench Segment Data
Table 7	Excavated Material Processing and Disposition Summary
Table 8	Parcel D-1 Pipe and Manhole Sediment Samples and Disposition Summary
Table 9	Parcel D-1 Manhole Summary
Table 10	Parcel D-1 Extraneous Pipe Summary

List of Appendices

Appendix A	Kick-off Meeting Agenda
Appendix B	Air Monitoring Report
Appendix C	As-Built Drawings
Appendix D	Work Variances
Appendix E	Completion Inspection Checklists
Appendix F	Photographic Log
Appendix G	Data Validation Packages (provided on electronic copy only)
Appendix H	Work Area 24 Report Index
Appendix I	Work Area 25 Report Index
Appendix J	Work Area 28 Report Index
Appendix K	Work Area 29 Report Index
Appendix L	Work Area 30 Report Index
Appendix M	Radiological Data for Sediment Samples Collected from Parcel D-1 Piping
Appendix N	Radiological Unrestricted Release Recommendations for Parcel D-1 (Phase 1)
Appendix O	Clean Import Fill Data
Appendix P	Response to Comments Document

Acronyms and Abbreviations

¹³⁷ Cs	cesium-137
²²⁶ Ra	radium-226
²³² Th	thorium-232
²³⁹ Pu	plutonium-239
⁹⁰ Sr	strontium-90
ACM	asbestos-containing materials
AEC	Atomic Energy Commission
ALARA	As Low As Reasonably Achievable
AM	<i>Final Removal Action Action Memorandum—Revision 2006, Hunters Point Shipyard, San Francisco, California</i>
ANL	Argonne National Laboratory
APP/SSHP/RPP	Accident Prevention Plan/Site Safety and Health Plan/Radiation Protection Plan
Bay	San Francisco Bay
bgs	below ground surface
BMP	best management practices
CDHS	California Department of Health Services
CDPH	California Department of Public Health
CHP	Certified Health Physicist
CIP	cast iron pipe
CMP	corrugated metal pipe
cpm	counts per minute
CSM	Conceptual Site Model
CSO	Caretaker Site Office
CTO	contract task order
cy	cubic yard
D-1 Demolition Plan	<i>Final Demolition Plan for the Gun Mole Pier and South Pier Buildings, Hunters Point Shipyard, San Francisco, California</i>
D-1 Execution Plan	<i>Final Execution Plan for the Parcel D-1 Radiological Remediation and Support, Hunters Point Shipyard, San Francisco, California</i>
D-1 Radiological Work Plan	<i>Final Parcel D-1 Radiological Work Plan, Hunters Point Shipyard, San Francisco, California</i>
D-1 Sewer Design Plan	<i>Final Design Plan for the Parcel D-1 Sanitary Sewer and Storm Drain Removal, Hunters Point Shipyard, San Francisco, California</i>
D-1 Sewer Work Plan	<i>Final Project Work Plan, Parcel D-1 Storm Drain and Sanitary Sewer Removal, Hunters Point Shipyard, San Francisco, California</i>
DCGL	derived concentration guideline
DoD	U.S. Department of Defense
dpm/100 cm ²	disintegrations per minute per 100 square centimeters
DTSC	California Department of Toxic Substances Control

Acronyms and Abbreviations (continued)

ELCR	excess lifetime cancer risk
EMS	Environmental Management Systems, Inc.
EP	extraneous pipe
EPA	U.S. Environmental Protection Agency
ESU	excavated soil unit
FSS	final status survey
ft ²	square feet
GMP	Gun Mole Pier
GPS	global positioning system
HPNS	Hunters Point Naval Shipyard
HRA	<i>Final Historical Radiological Assessment, Volume II, History of the Use of General Radioactive Materials, 1939—2003, Hunters Point Shipyard, San Francisco, California</i>
IR	Installation Restoration
IRP	Installation Restoration Program
LLRW	low-level radioactive waste
m ²	square meter
MARSSIM	<i>Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), NUREG-1575, Revision 1</i>
MDA	minimum detectable activity
MDL	method detection limit
mph	mile per hour
mrem/yr	millirem per year
NaI	sodium iodide
NAVSEA	Naval Sea Systems Command
Navy	U.S. Department of the Navy
NCP	National Oil and Hazardous Substances Contingency Plan
NRC	U.S. Nuclear Regulatory Commission
NRDL	Naval Radiological Defense Laboratory
pCi/g	picocuries per gram
PNNL	Pacific Northwest National Laboratory
PQCM	Project Quality Control Manager
PVC	polyvinyl chloride
RACR	removal action completion report
Radiological RACR	radiological removal action completion report
RAO	removal action objective
RASO	Radiological Affairs Support Office
RCA	Radiologically Controlled Area
RCP	Radiological Control Plan
RCS	Radiological Controls Supervisor
ROC	radionuclide of concern
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager

Acronyms and Abbreviations (continued)

RSO	Radiological Safety Officer
RSY	radiological screening yard
SAP	sampling and analysis plan
SD	storm drain
Shaw	Shaw Environmental & Infrastructure, Inc.
Shaw E&I	Shaw Environmental & Infrastructure, Inc., a CB&I company
Sr	strontium
SS	sanitary sewer
SU	survey unit
SUPR	Survey Unit Project Report
SUPRA Revision 3	<i>Final Survey Unit Project Reports Abstract, Revision 3, Sanitary Sewer and Storm Drain Removal Project, Hunters Point Shipyard, San Francisco, California</i>
SUPRA SSSD	<i>Final Survey Unit Project Reports Abstract for Sanitary Sewer and Storm Drain Removal Conducted After January 1, 2011, Hunters Point Shipyard, San Francisco, California</i>
SWPPP	stormwater pollution prevention plan
T&D	transport and disposal
TCRA	time-critical removal action
TEDE	total effective dose equivalent
TES	Terranear Energy Solutions
TSP	task-specific plan
TtEC	Tetra Tech EC, Inc.
UC	utility corridor
VCP	vitrified clay pipe
VSP	visual sampling plan
WA	work area
WV	work variance

1.0 Introduction

This radiological removal action completion report (Radiological RACR) describes radiological surveys and remediation that were performed to achieve radiological free-release of radiologically impacted areas within a specific section of Parcel D-1 at Hunters Point Naval Shipyard (HPNS), San Francisco, California (Figure 1). Shaw Environmental & Infrastructure, Inc. (Shaw), a CB&I company (Shaw E&I), was contracted by the U.S. Department of the Navy (Navy) to perform these activities at HPNS for the Base Realignment and Closure Program Management Office West under Naval Facilities Engineering Command Southwest Remedial Action Contract No. N62473-08-D-8822, Contract Task Order (CTO) 0006. The Radiological Affairs Support Office (RASO) served as technical advisor to the Navy. The work described in this Radiological RACR is Phase 1 of two separate work efforts to complete the radiological release of Parcel D-1.

This Radiological RACR was prepared to summarize the results of the radiological work performed within Parcel D-1 to protect the public health and welfare, and the environment from actual or potential releases of radiological contaminants and to document the achievement of the radiological removal action objective identified in *Final Basewide Radiological Removal Action Action Memorandum—Revision 2006, Hunters Point Shipyard, San Francisco, California* (AM; Navy, 2006). Except in relation to reuse as potential backfill material or waste characterization for disposal of excavated soil derived from removal of the Parcel D-1 storm drain (SD) and sanitary sewer (SS) systems, this Radiological RACR does not address chemical contamination and does not include or affect any other designated HPNS parcels. Neither sample collection activities nor laboratory analyses were performed during the Parcel D-1 survey and remediation activities to meet any chemical remediation goals.

Environmental investigation and remediation at HPNS was performed under the U.S. Department of Defense (DoD) Installation Restoration Program (IRP) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and the National Oil and Hazardous Substances Contingency Plan (NCP). Under Executive Order 12580 the Navy was the lead agency for implementing the IRP and removal actions, including CTO 0006. The U.S. Environmental Protection Agency (EPA) was the lead regulatory agency. Additional regulatory oversight was provided by the Regional Water Quality Control Board, San Francisco Bay Region; the California Department of Public Health (CDPH); and other agencies. Radiological remediation at HPNS was overseen by the Navy with technical input from the RASO and review by the CDPH.

The Final Historical Radiological Assessment, Volume II, History of the Use of General Radioactive Materials, 1939—2003, Hunters Point Shipyard, San Francisco, California (HRA; Naval Sea Systems Command [NAVSEA], 2004), identified the following features in Parcel D-1 as radiologically impacted:

- Building 274
- Building 383 Area
- Former Building 313, 313A, and 322 Sites
- Gun Mole Pier (GMP)
- SS and SD systems within Parcel D-1

The Navy also identified the South Pier as radiologically impacted due to its associated ship berths. The HRA does not specifically identify South Pier as a separate radiologically impacted area; however, the land portions of the berths associated with South Pier (Berths 10 through 13) are. Berths 10 through 13 were identified as potentially radiologically impacted in the HRA in the discussion of Parcel F (NAVSEA, 2004). Radiological impacts to the berths may have resulted from berthing of Operations Crossroads ships, berthing of the YGN-73 (radioactive waste disposal barge), and usage by the Naval Radiological Defense Laboratory (berthing of experimental barges and YAGs-39 and -40). The physical features, shown on Figure 2, were radiologically surveyed and remediated as necessary to achieve free-release. The HRA identified radionuclides of concern (ROCs) for the following features (Table 1):

1. Building 274: cesium-137 (^{137}Cs), radium-226 (^{226}Ra), and strontium-90 (^{90}Sr)
2. Building 383 Area: ^{137}Cs , ^{226}Ra , ^{90}Sr , and plutonium-239 (^{239}Pu)
3. Former Building 313, 313A, and 322 Sites: ^{137}Cs , ^{226}Ra , ^{90}Sr , ^{239}Pu , and thorium-232 (^{232}Th)
4. GMP: ^{137}Cs , ^{226}Ra , ^{90}Sr , and ^{239}Pu
5. South Pier: ^{137}Cs , ^{226}Ra , ^{90}Sr , and ^{239}Pu
6. The SS and SD systems: ^{137}Cs , ^{226}Ra , and ^{90}Sr

The HPNS operational history and subsequent investigative data indicated that Parcel D-1 contained radioactive contamination that required a response action. This decision was documented in the AM (Navy, 2006), which was created to direct time-critical removal actions (TCRAs) within areas throughout the base that contain localized radioactive contamination. Radiological release criteria for the ROCs were established in the AM. Radiological release

criteria are presented in Table 2 and radiological release criteria for the SD and SS system are presented in Table 3.

This Radiological RACR summarizes the activities performed to support radiological free-release at Parcel D-1. These activities included:

- Removing SS and SD piping, which included pipe and all components (manholes, drop inlets, clean-outs, lift stations, etc.), and soil from above and immediately adjacent to and below the piping
- Delivering excavated soil from the SS and SD trenches to HPNS Radiological Screening Yards (RSYs) operated by the Basewide Radiological Contractor (Tetra Tech EC, Inc. [TtEC])
- Surveying the excavated SS and SD piping for radiological release or characterizing them as wastes for coordinated hand-off to Navy's low-level radioactive waste (LLRW) contractor (Environmental Management Systems, Inc. [EMS], prior to November 2011, and after November 2011, their contractual successor, Terranear Energy Solutions [TES] for LLRW) for radiological waste, or the Navy's basewide transport and disposal (T&D) contractor (Innovative Technical Solutions, Inc.) for nonradiological waste
- Performing radiological surveys in the SS and SD trenches and delivering trench wall and bottom media samples to the HPNS on-site radiological laboratory operated by the Basewide Radiological Contractor for radiological analyses to support free-release or additional removal of excavated soil for trench survey units (SUs)
- Coordinating the return of data from the HPNS on-site radiological laboratory and tracking of excavated soil with the Basewide Radiological Contractor
- Performing final status surveys (FSSs) of the SS and SD trenches
- Managing field data from characterization and removal activities and data from the HPNS on-site radiological laboratory
- Submitting survey unit project reports (SUPRs) for trench SUs and excavated survey units (ESUs)
- Removing asphalt, railroad ties, and railroad rails from the GMP and South Pier
- Managing asphalt on the GMP and South Pier as potentially radiologically impacted
- Performing structural engineering surveys, asbestos and lead paint surveys and abatements, and demolition and packaging or staging and/or disposal of building debris for the following buildings of the GMP: 370, 375 (also known as 360; various HPNS maps refer to this structure as 375 or 360), 376, 377, 378, 379, 380, 383, 384, and 385, and Building 311 on the South Pier

- Performing radiological characterization surveys, radiological remediation and FSSs, and generating FSS reports for Building 274; Former Building 313, 313A, and 322 Sites; the Building 383 Area footprint; the GMP; and the South Pier

Shaw E&I holds U.S. Nuclear Regulatory Commission (NRC) Materials License No. 20-31340-0, expiration date January 31, 2019, and performed CTO 0006 work under that authority. Shaw coordinated the radiological screening of potentially radioactive excavated soil with the Basewide Radiological Contractor and coordinated the management of radioactive wastes (i.e., SS, SD, asphalt, concrete, and soil) with EMS and their contractual successor: TES. TtEC, EMS, and TES are Navy HPNS contractors providing specific radiological services under their own NRC licenses. The majority of T&D of nonradiological waste was conducted under a separate HPNS basewide waste disposal contract overseen by the Navy. Waste disposal was not included as part of CTO 0006.

1.1 Hunters Point Naval Shipyard Location and Description

The HPNS site lies entirely within the corporate boundaries of the County of San Francisco, at the southeast corner of the City of San Francisco, California (Figure 1). The site encompasses approximately 848 acres including about 416 acres on land situated on a 2-mile-long promontory projecting southeastward into the San Francisco Bay (Bay). The remaining 432 acres constitute the adjacent offshore areas.

In 1992, the Navy divided HPNS into five contiguous parcels (A through E) to expedite remedial action activities and land reuse. Parcel F was designated in 1996 and encompasses the offshore areas. The Navy designated the landfill area in Parcel E as Parcel E-2 in September 2004. Subsequently, Parcel A was transferred to the City and County of San Francisco for development. In July 2008, the Navy divided HPNS into eight parcels (B, C, D-1, D-2, E, E-2, G, and F) and three utility corridors (UCs) (UC 1, UC2, and UC3) (Figure 1). Parcels B, C, D-1, D-2, E, E-2, and G and UC1, UC2, and UC3 encompass the onshore areas.

Based on the HPNS radiological operational history described in the HRA (NAVSEA, 2004) and site-specific investigative data, the Navy determined that potential low-level radioactive contamination in soil and debris at HPNS required a response action. This decision is documented in the AM (Navy, 2006). The AM included revisions and updates to implement the recommendations of the HRA.

1.2 Parcel D-1 Site Description

Parcel D-1 is located in the southeastern portion of HPNS (Figure 1) and was constructed entirely of fill between approximately 1942 and 1947. According to the City and County of San Francisco redevelopment plan, Parcel D-1 will be zoned for industrial and maritime

industrial uses. Most of Parcel D-1 was formerly part of the industrial support area and used for shipping, ship repair, and office and commercial activities.

The entire surface of Parcel D-1 is fill. The fill is up to 110 feet below existing grade (U.S. Coast and Geodetic Survey, 1903 and ENGE0, 2009). The fill is significantly shallower north toward E Street and south toward Mahan Street and H Street. Parcel D-1 has an average elevation of approximately 9 feet above sea level and approximately 7,085 lineal feet of constructed, vertical-walled shoreline that is effectively all ship berth (Naval Civil Engineering Command, 1949).

Approximately two-thirds of the parcel surface was covered with concrete or asphalt. Compacted gravel-sand fill constitute the remaining parcel surface. The GMP and South Pier extend southeastward into the Bay and are located by the South Slip (Naval Civil Engineering Command, 1949).

The GMP, and possibly South Pier, was used for berthing contaminated ships following atomic weapons testing, radioactive waste management activities, and decontamination tests performed by the Navy Radiological Defense Laboratory (NRDL) and other maritime use.

Parcel D-1 contains IRP sites. Installation Restoration (IR) sites indicated to have potential soil and/or groundwater chemical impact and their presence affects the management and reuse of excavated soil under CTO 0006 (Figure 2).

Parcel D-1 was divided into six work areas (WAs) to facilitate the radiological clearance of buildings, surfaces, and the SD and SS system. WAs 13, 24, 25, 28, 29 and 30 were created to be compatible with the nomenclature used by the Navy's Basewide Radiological Contractor to simplify administration of the work. The IR sites and WAs are shown on Figure 2.

1.3 Current and Future Land Use

Currently, Parcel D-1 areas not radiologically released under this radiological removal action are scheduled to be transferred to the Parcel D-1 Phase II Remediation Contractor for additional radiological remediation efforts within WAs 24 and 25.

Following this removal action, and after other additional remedial activities are completed, portions of HPNS Parcel D-1 will be transferred to the City and County of San Francisco for conversion to nondefense reuse. The City and County of San Francisco's reuse plan identifies a wide range of planned reuse opportunities across HPNS, including residential, commercial, mixed use (residential/commercial), industrial, maritime, and open space.

1.4 Project Schedule

The project schedule, as modified due to field conditions, is included as Figure 3. The project duration was extended compared to the original schedule for several reasons including significant weather delays and scope adjustments.

1.5 Report Organization

The purpose of this Radiological RACR is to describe and summarize the results of the radiological work performed in Parcel D-1 to protect the public health and welfare, and the environment from actual or potential releases of radiologic contaminants and document the results of the implemented TCRA and FSS activities. The radiological work performed for Parcel D-1 included documenting and summarizing the SD and SS removal activities as well as the radiological work completed for impacted South Pier and GMP areas, Building 274, Building Area 383 and Former Building 313, 313A, and 322 Sites.

This Radiological RACR is organized as follows:

- **Section 1.0, “Introduction”**—Section 1.0 provides project information including descriptions of Parcel D-1 within the context of HPNS, current and future land use of the property, fieldwork photographic documentation, and the purpose and organization of the Radiological RACR document.
- **Section 2.0, “Background”**—Section 2.0 presents an abbreviated history of the SD and SS systems, discusses the transport of radionuclides at HPNS, identifies the removal action objectives (RAOs) and remediation goals, and summarizes the various documents that support the radiological work performed on Parcel D-1.
- **Section 3.0, “Parcel D-1 Overview”**—Section 3.0 provides an overview of the FSS activities for the radiologically impacted buildings and structures as well as former area and building sites, including the South Pier and GMP. This section summarizes the procedures for performance of the work activities, identifies those activities common to each of the buildings and sites, and discusses the IR Program sites associated with Parcel D-1.
- **Section 4.0, “Work Area 24”**—Section 4.0 summarizes the SD and SS removal activities performed in WA 24 for Trench SUs 250, 251, 252, 253, 254, 255, 256, 257, 259, 261, 264, 265, 272, 273, 274, and 277 and the FSS activities for the Former Building 313, 313A, and 322 Sites and Building 274.
- **Section 5.0, “Work Area 25”**—Section 5.0 summarizes the SD and SS removal activities performed in WA 25 for Trench SU 283.
- **Section 6.0, “Work Area 28”**—Section 6.0 summarizes the SD and SS removal activities performed in WA 28 for Trench SUs 258, 262, 270, 271, 276, 278, 279, 280, 281, 282, and the FSS activities for the Building 383 Area and GMP.

- **Section 7.0, “Work Area 29”**—Section 7.0 summarizes the SD and SS removal activities performed in WA 29 for Trench SUs 266, 267, 268, 269, 275, and 276.
- **Section 8.0, “Work Area 30”**—Section 8.0 summarizes the SD and SS removal activities performed in WA 30 for Trench SUs 260 and 263, and the FSS activities for South Pier.
- **Section 9.0, “Site Restoration and Temporary Swale Construction”**—Section 9.0 describes the site restoration activities completed for Parcel D-1 including the installation of the temporary swale system and stormwater outfalls.
- **Section 10.0, “Community Relations Activity”**—Section 10.0 discusses the community relations efforts performed during this TCRA.
- **Section 11.0, “Removal Action Costs”**—Section 11.0 presents the costs for this removal action.
- **Section 12.0, “Conclusions and Recommendations”**—Section 12.0 presents the conclusions and recommendations.
- **Section 13.0, “References”**—Section 13.0 includes a list of documents used to compile this Radiological RACR.
- **Appendices A through P:**
 - Appendix A, “Kick-off Meeting Agenda”
 - Appendix B, “Air Monitoring Report”
 - Appendix C, “As-Built Drawings”
 - Appendix D, “Work Variances”
 - Appendix E, “Completion Inspection Checklists”
 - Appendix F, “Photographic Log”
 - Appendix G, “Data Validation Packages”
 - Appendix H, “Work Area 24 Report Index”
 - Appendix I, “Work Area 25 Report Index”
 - Appendix J, “Work Area 28 Report Index”
 - Appendix K, “Work Area 29 Report Index”
 - Appendix L, “Work Area 30 Report Index”
 - Appendix M, “Radiological Data for Sediment Samples Collected from Parcel D-1 Piping”

- Appendix N, “Radiological Unrestricted Release Recommendations for Parcel D-1 (Phase 1)”
- Appendix O, “Clean Import Fill Data”
- Appendix P, “Response to Comments Document”

2.0 Background

This section provides a brief site history, discussion of the HPNS Conceptual Site Model (CSM), and RAOs and remediation goals. Also included are brief descriptions of the supporting documents and reports that guided the Parcel D-1 SD and SS and building/site FSS work activities.

2.1 History

The Navy obtained ownership of HPNS for shipbuilding, repair, and maintenance in 1940. HPNS began using radioactive materials in shipyard operations and NRDL research projects in the early 1940s. Operations at HPNS included ship decontamination, repair, and dismantling activities that generated radium dial and sandblast grit waste streams. In addition, the Navy managed a waste disposal program that included the removal of radioactive materials from HPNS. Between 1946 and 1947, HPNS operations included decontamination activities on ships used during OPERATION CROSSROADS nuclear weapons tests. NRDL activities and projects involved research into decontamination methods, personnel protection, development of radiation detection instrumentation, effects of radiation on living organisms and natural and synthetic materials, and experimentation in decontamination methodologies. The NRDL research projects ended in 1969 and the associated buildings were decontaminated and cleared for unrestricted reuse based on the standards in place at that time. The Navy deactivated HPNS operations in 1974 and the property remained largely unused until 1976. HPNS was leased to Triple A Machine Shop, Inc., a private ship repair company, from 1976 to 1986 when its tenancy was terminated. The Navy resumed its occupancy of HPNS in 1987.

The present-day configuration of the SD and SS systems at HPNS is the result of an evolutionary process. These systems were originally designed and built in the 1940s as a combined system, using the same conveyance piping and 40 separate discharge outfalls into the Bay. This combined system grew in sections from the 1940s to its maximum size in 1958, when it underwent the first in a series of separation projects. The purpose of the separation projects was to provide for installation of dedicated SS piping and pump stations that would discharge SS effluent off site to a publicly owned treatment plant operated by the City and County of San Francisco. A sewage lift station was constructed specifically for conveyance of much of the sanitary sewage; however, stormwater flows from heavy rains would overwhelm the sewage lift station, and much of the sewage and stormwater diverted to various existing outfalls into the Bay (Navy, 2008).

Separation of the SD and SSs involved installation of dedicated SS collection piping or diversion structures within the combined system. Twenty-eight Bay outfalls were converted for exclusive

use as stormwater outlets, while 12 continued to serve as combined outlets. In 1973, the second separation project was undertaken including the removal of some of the stormwater outfalls from the South Basin area, just offshore from the Parcel E shoreline. The last of the separation projects was completed in 1976 and involved the installation of additional dedicated SS piping. Complete separation of the combined systems was never achieved, and subsequent inspections revealed that cross-connections may still exist. Due to the evolutionary nature of the separation process, radiological contamination from the same sources may have impacted SD and SS systems piping and other components.

As a result of the historical radiological operations at HPNS, some buildings, SD and SS lines, soil, debris, and slag material have indicated the potential presence of low-level radioactive contamination. Hazardous materials also have been found at HPNS. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and as amended by Superfund Amendments and Reauthorization Act of 1986, HPNS was placed on the National Priorities List in 1989.

2.2 Conceptual Site Model

Radioactive material consists of radionuclides that are unstable and undergo spontaneous transformations by releasing energy until a stable state is reached. This transformation process, or radioactive decay, is usually accompanied by the emission of charged particles (e.g., alpha and beta particles) or gamma rays. The radionuclides potentially present at HPNS likely were the result of:

- Burial along with excavated fill materials while increasing the footprint of HPNS
- Residue from decontamination of ships or workers
- Residual contamination as a result of NRDL experiments or tests in structures or land areas
- Residual contamination from shipyard operations
- Release into SSs and SDs

The CSM is based on the supposition that radioactive materials likely were discharged from numerous locations throughout HPNS into the SD and SS systems and may have been released into surrounding soil during the course of normal operations and maintenance or repair activities (Navy, 2008). Manholes at HPNS have been found to be constructed of concrete and/or brick and appeared to be porous, likely resulting in the transport of contamination into the surrounding soil. Piping at HPNS generally was composed of:

- Concrete
- Vitreous clay pipe (VCP)
- Cast iron pipe (CIP)
- Steel
- Perforated metal
- Polyvinyl chloride (PVC) plastic
- Concrete-encased VCP

Typically, the pipe sections were connected at HPNS by unsealed slip fittings at joints. Some leakage from the piping was anticipated when the SD and SS systems were installed. Historical information indicates that the SD and SS systems were often cleaned by power washing that may have forced radiological contamination out of the piping and into the surrounding soil. The most recent power-washing event was performed at HPNS in 1999. Power washing of these old sewer systems may easily have caused further cracks or breaks in the piping and subsequent migration of contamination into the surrounding soil. The migration and extent of radiological soil contamination at HPNS likely depended on how and where releases from the SD and SS systems occurred.

The HPNS SD and SS removal actions performed throughout Parcels B, C, D-2, G, and UC1, UC2, and UC3 support the accuracy of the CSM. Similar types of fill materials were found in the excavated trenches and waste materials were not discovered during excavation. Identified radiological contamination has been found primarily in excavated soil at HPNS. There has been little indication of historical spills or accidental releases based on the historical research performed and radiological site investigations (Navy, 2008).

2.3 Removal Action Objectives and Remediation Goals

The RAO for this removal action were to implement the AM (Navy, 2006) and protect public health and welfare and the environment, which are consistent with the NCP requirements in Title 40 Code of Federal Regulations, Part 300.415(b)(2) (Shaw, 2010a). The work objective was to achieve unrestricted free-release for all areas and features identified within Parcel D-1 as

radiologically impacted by the HRA (NAVSEA, 2004). The key steps implemented under CTO 0006 were as follows:

- Developed and obtained approval of work plans, a design plan, and task-specific plans (TSPs) to guide the work. The TSPs governed the survey and release of all nonsewer radiologically impacted areas and features.
- Performed characterization surveys and radiological remediation/removal, support surveys and FSSs at radiologically impacted areas and features, and supported/coordinated waste management, sample analysis and reporting, soil tracking, and RASO concurrences for excavated soil and other wastes.
- Completed FSS reports and completion report documents for concurrence of unrestricted free-release by the Navy Remedial Project Manager (RPM), RASO, the City and County of San Francisco, and the CDPH where appropriate.

The release criteria necessary to achieve the objectives of free-release are shown in Table 2.

2.4 Supporting Documents Summary

The following subsections summarize the relevant supporting work plans and other documents necessary to facilitate and complete the radiological removal action and FSS activities associated with Parcel D-1. Each of these supporting documents was incorporated by reference into this Radiological RACR and is available for review through the Environmental Restoration Program Record File.

2.4.1 Final Execution Plan for the Parcel D-1 Radiological Remediation and Support

All work conducted for the Parcel D-1 impacted buildings/structures and former building sites was outlined by the *Final Execution Plan for the Parcel D-1 Radiological Remediation and Support, Hunters Point Shipyard, San Francisco, California* (D-1 Execution Plan; Shaw, 2010a).

The D-1 Execution Plan is a stand-alone document and is supported and implemented by four additional stand-alone documents:

- *Final Parcel D-1 Radiological Work Plan, Hunters Point Shipyard, San Francisco, California* (D-1 Radiological Work Plan; Shaw, 2010b)
- *Final Project Work Plan, Parcel D-1 Storm Drain and Sanitary Sewer Removal, Hunters Point Shipyard, San Francisco, California* (D-1 Sewer Work Plan; Shaw, 2010c)
- *Final Design Plan for the Parcel D-1 Sanitary Sewer and Storm Drain Removal, Hunters Point Shipyard, San Francisco, California* (D-1 Sewer Design Plan; Shaw, 2010d)
- *Final Demolition Plan for the Gun Mole Pier and South Pier Buildings, Hunters Point Shipyard, San Francisco, California* (D-1 Demolition Plan; Shaw, 2010e)

The D-1 Execution Plan (Shaw, 2010a) is supported by the following appendices within the Execution Plan:

- The Accident Prevention Plan/Site Safety and Health Plan/Radiation Protection Plan (APP/SSHP/RPP), as Appendix A
- The Stormwater Pollution Prevention Plan (SWPPP), as Appendix B
- The Construction Quality Control Plan, as Appendix C
- The Traffic Control Plan, as Appendix D
- The State Historic Preservation Office notification letter, as Appendix E
- The Waste Management Plan, as Appendix F

This D-1 Execution Plan (Shaw, 2010a) also established that two sampling and analysis plans (SAPs) were used during the performance of D-1 work activities:

- The SAP appended to the D-1 Sewer Work Plan (Shaw, 2010c) guided SD and SS removal sampling and analyses within radiologically impacted sites identified in the HRA (NAVSEA, 2004)
- The SAP appended to the D-1 Radiological Work Plan (Shaw, 2010b) guided radiological survey and release sampling and analyses of all features (other than the SD and SS systems)

2.4.2 Parcel D-1 Radiological Work Plan

The radiological work conducted for the Parcel D-1 impacted buildings/structures and former building sites and other work control procedures were performed in accordance with the D-1 Radiological Work Plan (Shaw, 2010b). This document provided guidance for the following:

- Radiological training
- Various work control procedures
- Radiological survey types and classifications
- Survey planning and implementation
- Results assessment
- Release criteria and investigation levels
- Field and laboratory instruments
- Decontamination and remediation

- Radioactive materials management
- Quality assurance and control

The procedures and methodologies outlined in the D-1 Radiological Work Plan (Shaw, 2010b) were applicable to the work performed for the radiologically impacted buildings and former building sites.

2.4.3 Project Work Plan, Parcel D-1 Storm Drain and Sanitary Sewer Removal

The Parcel D-1 work activities were performed primarily in accordance with the D-1 Sewer Work Plan (Shaw, 2010c). The D-1 Sewer Work Plan presented the overall scope and approach for SD and SS removal and radiological survey and release of the excavated trench areas at HPNS.

The general approach to removing and radiologically surveying the SD and SS lines described in the D-1 Sewer Work Plan (Shaw, 2010c) was to:

- Remove any nonsoil surface cover
- Excavate soil
- Remove piping
- Plug open pipes left in place during the removal process to prevent fluids from entering or exiting pipes
- Conduct ex situ radiological screening and sampling of the piping
- Conduct FSSs of the excavated soil and excavation trenches

Following an evaluation of the results of these activities and the removal of any identified radiological contamination, the trench excavations were backfilled and the site restored.

The D-1 Sewer Work Plan (Shaw, 2010c) provided the procedures or references to procedures that contained the methodologies for performing the SD and SS removal actions including:

- Radiological control plan
- FSSs
- Field implementation
- Waste management plan
- Environmental protection plan
- SAP

- Project quality control plan
- SWPPP

In accordance with the D-1 Sewer Work Plan (Shaw, 2010c), most SD and SS piping within each WA were to be removed, although piping may be left in place to be addressed at a later date and limited piping may be left in place permanently. Specifically, piping laterals originating at nonradiologically impacted buildings would only be removed within the first 10 feet of their union with a main trunk line. If radiological contamination was not present in this segment of the line, the exposed ends of the lateral were capped or plugged and the remaining portions left in place. If evidence of radiological contamination was encountered, the remaining lateral was removed to the extent practicable. In addition, piping located within 10 feet of a building (referred to in this Radiological RACR as the 10-foot buffer zone) or other obstruction was left in place to protect the integrity of the structure and to ensure the health and safety of workers and tenants.

2.4.4 Design Plan for the Parcel D-1 Sanitary Sewer and Storm Drain Removal

The D-1 Sewer Design Plan (Shaw, 2010d) included guidance for excavation and site restoration activities within Parcel D-1, in addition to the design drawings for the SD and SS removal activities. The design drawings were based on the original Base Map (Gahagan and Brian, 1993). Following discussions with the Navy, the design drawings were revised and superseded by the following documents (herein referred to as Design Drawings), which collectively illustrate the SS and SD locations as well as WAs 24, 25, 28, 29 and 30:

- *Sanitary Sewer and Storm Drain Lines in Parcel D-1, Hunters Point Shipyard, San Francisco, California* (Shaw, 2010f)
- *Parcel D-1 IR Sites and WAs, Hunters Point Shipyard, San Francisco, California* (Shaw, 2010g)

Work originally contracted for within WA 13 has been deferred to future work efforts not under this contract. These WA numbers (WAs 24, 25, 28, 29, and 30) were incorporated into the identification number for each trench segment to ensure proper tracking and reporting of excavation activities and piping removal.

2.4.5 Demolition Plan for the Gun Mole Pier and South Pier Buildings

The D-1 Demolition Plan (Shaw, 2010e) included guidance for performing demolition activities at GMP and South Pier in Parcel D-1. Activities that were performed in accordance with this Demolition Plan are summarized as follows:

- Structural engineering surveys sufficient to ensure safe demolition
- The use of existing surveys or performance of pre-demolition surveys and abatement for asbestos-containing materials (ACMs) and lead-based paint for buildings on the GMP and the South Pier
- Demolished buildings on the GMP and the South Pier
- Removed material for disposal and recycle

On the GMP, Buildings 370, 375, 376, 377, 378, 379, 380, 383, 384, and 385 and the storage shed adjacent to Building 380 were demolished (Figure 2). On the South Pier, Building 311 was demolished (Figure 2).

2.4.6 Final Task-Specific Plan Building 274

The *Final Task-Specific Plan, Building 274 Scoping Survey, Hunters Point Shipyard, San Francisco, California* (Shaw, 2010h) provided task-specific details for the Scoping Survey of Building 274. The survey was conducted in accordance with the general approach and methodologies that are given in the D-1 Radiological Work Plan (Shaw, 2010b). The survey activities conformed to the requirements of the APP/SSHP/RPP (Shaw, 2010a). No exceptions to the D-1 Radiological Work Plan, *E&I Standard Operating Procedures* (Shaw E&I, 2014a), or the APP/SSHP/RPP were noted.

2.4.7 Final Task-Specific Plan Building 383 Area

The *Final Task-Specific Plan, Building 383 Area Scoping Survey, Hunters Point Shipyard, San Francisco, California* (Shaw, 2010i) provided task-specific details for the Scoping Survey at the Building 383 Area. The survey was conducted in accordance with the general approach and methodologies that are given in the D-1 Radiological Work Plan (Shaw, 2010b). The survey activities conformed to the requirements of the APP/SSHP/RPP (Shaw, 2010a). No exceptions to the D-1 Radiological Work Plan, *E&I Standard Operating Procedures* (Shaw E&I, 2014a), or the APP/SSHP/RPP were noted.

2.4.8 Final Task-Specific Plan Former Building 313, 313A, and 322 Sites

The *Final Revision 1, Final Task-Specific Plan, Former Building Sites 313, 313A, and 322, Characterization Survey and Remedial Action, Hunters Point Shipyard, San Francisco, California* (Shaw, 2011a) provided task-specific details for the scoping survey at the sites. The survey was in accordance with the general approach and methodologies that are given in the

D-1 Radiological Work Plan (Shaw, 2010b). The survey activities conformed to the requirements of the APP/SSHP/RPP (Shaw, 2010a). No exceptions to the D-1 Radiological Work Plan, *E&I Standard Operating Procedures* (Shaw E&I, 2014a), or the APP/SSHP/RPP were noted.

2.4.9 Final Task-Specific Plan South Pier Area Scoping Survey

The *Final Task-Specific Plan, South Pier Scoping Survey, Hunters Point Shipyard, San Francisco, California* (Shaw, 2010j) provided task-specific details for the scoping survey. The survey was conducted in accordance with the general approach and methodologies that are given in the D-1 Radiological Work Plan (Shaw, 2010b). The survey activities conformed to the requirements of the APP/SSHP/RPP (Shaw, 2010a). Any exceptions to the D-1 Radiological Work Plan; *E&I Standard Operating Procedures* (Shaw E&I, 2014a); *Final Task-Specific Plan, South Pier Scoping Survey, Hunters Point Shipyard, San Francisco, California*; or the APP/SSHP/RPP were noted in Section 1.5 of the *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013a; Appendix L).

2.4.10 Final Task-Specific Plan Addendum South Pier Area Scoping Survey

The *Final, Final Task-Specific Plan Addendum, South Pier Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California* (Shaw, 2012a) provided task-specific details for the additional radiological survey work at the South Pier Area. The survey activities conformed to the requirements of the APP/SSHP/RPP (Shaw, 2010a). Any exceptions to the D-1 Radiological Work Plan (Shaw, 2010b); *E&I Standard Operating Procedures* (Shaw E&I, 2014a); *Final, Final Task-Specific Plan Addendum, South Pier Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California*; or the APP/SSHP/RPP were noted in Section 1.5 of the *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013a; Appendix L).

2.4.11 Final Task-Specific Plan Gun Mole Pier Area Scoping Survey

The *Final Task-Specific Plan, Gun Mole Pier Area Scoping Survey, Hunters Point Shipyard, San Francisco, California* (Shaw, 2011b) provided task-specific details for the scoping survey. The survey was conducted in accordance with the general approach and methodologies that are given in the D-1 Radiological Work Plan (Shaw, 2010b). The survey activities conformed to the requirements of the APP/SSHP/RPP (Shaw, 2010a). Any exceptions to the D-1 Radiological Work Plan; *E&I Standard Operating Procedures* (Shaw E&I, 2014a); *Final Task-Specific Plan, Gun Mole Pier Area Scoping Survey, Hunters Point Shipyard, San Francisco, California*; or the APP/SSHP/RPP were noted in Section 1.5 of the *Final, Final Status Survey Report, Gun Mole Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2014b; Appendix J).

2.4.12 Final Task-Specific Plan Addendum Gun Mole Pier Area Scoping Survey

The *Final, Final Task-Specific Plan Addendum, Gun Mole Pier Area Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California* (Shaw, 2012b) provided task-specific details for the additional radiological survey work at the GMP area. The survey activities performed conform to the requirements of the APP/SSHP/RPP (Shaw, 2010a). Any exceptions to the D-1 Radiological Work Plan (Shaw, 2010b); *E&I Standard Operating Procedures* (Shaw E&I, 2014a); *Final, Final Task-Specific Plan Addendum, Gun Mole Pier Area Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California*; or the APP/SSHP/RPP were noted in Section 1.5 of the *Final, Final Status Survey Report, Gun Mole Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2014b; Appendix J).

2.4.13 Final Survey Unit Project Reports Abstracts

The *Final Survey Unit Project Reports Abstract, Revision 3, Sanitary Sewer and Storm Drain Removal Project, Hunters Point Shipyard, San Francisco, California* (SUPRA Revision 3; TtEC, 2011a) was developed as an overarching document that provided information and details common to each of the numerous trench SUs designated throughout HPNS during the TCRA and to reduce the level of detail that typically would be redundant to each SUPR. The SUPRA Revision 3 was applicable to the SD and SS TCRA's performed at HPNS prior to December 31, 2010. A second SUPRA entitled the *Final Survey Unit Project Reports Abstract for Sanitary Sewer and Storm Drain Removal Conducted After January 1, 2011, Hunters Point Shipyard, San Francisco, California* (SUPRA SSSD; TtEC, 2011b) was prepared for SD and SS TCRA's performed after January 1, 2011. These documents were applicable to all HPNS SD and SS SUPR's and data sets prepared for regulatory review.

The SUPRA Revision 3 (TtEC, 2011a) and SUPRA SSSD (TtEC, 2011b) provided history of the SD and SS systems at HPNS, documentation of the site's operational history, and presented detailed discussions and common information related to SD and SS systems removal actions at HPNS including:

- Release limits
- As low as reasonably achievable (ALARA) process
- ROCs and associated release criteria
- Investigation levels for gamma scan surveys
- FSS objectives, design, and methodology
- RSY processing of peripheral material, overburden, and excavated soil
- Import fill sources, screening, and analytical results
- Reference areas

- Sample collection methodologies and laboratory analyses including gamma spectroscopy analysis flags
- Off-site laboratory selection
- Quality assurance, quality control, and comparative laboratory sample results
- ⁹⁰Sr analysis
- Uncertainty analysis
- Data assessment (verification, validation, and evaluation)
- Statistical tests
- Dose and risk modeling
- Final unrestricted radiological release criteria

The release criteria for SD and SS soil ROCs, as presented in the SUPRA Revision 3 (TtEC, 2011a) and SUPRA SSSD (TtEC, 2011b), are presented in Table 2 and Table 3 of this Radiological RACR and include residual doses for both outdoor workers and residents.

2.4.14 Survey Unit Project Report

The radiologic details of the SD and SS removal work completed for Parcel D-1 were provided in the final versions of the SUPRs for Trench SUs 250 through 283 (Shaw, 2012c through 2012aj; Appendices H through L). Each of the Parcel D-1 draft SUPRs was provided to the EPA, the California Department of Toxic Substances Control (DTSC), and the CDPH, all of whom provided comments that were addressed in the final SUPRs. Regulatory review and approval of the final SUPRs occurred separately from the review of this Radiological RACR.

The SUPRs (Shaw, 2012c through 2012aj; Appendices H through L) prepared for the SD and SS associated with Parcel D-1 presented radiological details and summarized the scope, approach, and survey results from the removal action activities. The objective of the SUPRs was to demonstrate that potential residual radioactivity levels inside the excavated trenches (exposed sidewalls and bottoms) and within the backfill material met the release criteria. Fieldwork and construction activities were briefly summarized in each SUPR; however, detailed information related to the fieldwork performed is provided in this Radiological RACR. Each SUPR presented pertinent discussions and information including:

- FSS activities performed for the trench SU and selected backfill materials
- Laboratory analytical results and comparison of on-site and off-site analytical results

- Dose modeling with RESRAD default input parameters for a conservative residential farmer scenario using the larger of the method detection limit (MDL) or reported activity
- Dose and risk modeling results
- ALARA and the environmental ALARA process, including identification and review of potential radiological impacts as well as discussions related to qualitative and quantitative ALARA analyses
- Recommendation for final unrestricted radiological release

The SUPRs (Shaw, 2012c through 2012aj; Appendices H through L) are indexed by WA in Appendices H (WA 24), I (WA 25), J (WA 28), K (WA 29), and L (WA 30).

3.0 Parcel D-1 Field Activities Overview

Parcel D-1 field activities consisted of two major work elements, outlined in this section. The first work element included radiological surveys of buildings and ground surfaces. The second work element was removal of the SD and SS system.

3.1 Radiological Surveys of Buildings and Ground Surfaces

Radiological surveys of buildings and ground surfaces were performed in accordance the D-1 Radiological Work Plan (Shaw, 2010b). Parcel D-1 WA boundaries, impacted building, impacted building area, and the former building sites are shown on Figure 2. Radiological surveys were performed at the following sites:

- Building 274
- Building 383 Area footprint
- Former Building 313, 313A, and 322 Sites
- GMP
- South Pier

The purpose of the radiological surveys and removals was to achieve free-release of the radiologically impacted sites. FSSs were performed by Shaw E&I consistent with the *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*, *NUREG-1575, Revision 1* (MARSSIM; DoD et al., 2000). The following sections provide an overview of the FSS activities performed for each of these sites. Results of the FSSs are summarized in Sections 4.17, 4.18, 6.11, 6.12, and 8.3 of this Radiological RACR.

3.1.1 Survey Design

The radiological surveys were designed consistent with MARSSIM (DoD et al., 2000) with additional guidance for the design of the survey and its implementation provided by the following documents:

- *A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys (Draft Report for Comment)*, *NUREG-1505* (NRC, 1998)
- *Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions*, *NUREG -1507* (NRC, 1997)

The surveys were performed in accordance with the TSPs prepared for each site, and the requirements outlined in the D-1 Radiological Work Plan (Shaw, 2010a).

The intent of each survey design was to collect sufficient data to support the development of an FSS consistent with MARSSIM guidance. To maintain the potential for the scoping survey to become an FSS, data were continuously analyzed to determine the relationship between each SU and the reference (background) area. The objective of the surveys was to demonstrate that residual radioactivity levels in each site met the radionuclide-specific release criteria for the associated ROCs, and achieved radiological release for unrestricted use of the structure or site. Radionuclide-specific release criteria were obtained using the Atomic Energy Commission (AEC) *Regulatory Guide 1.86*, "Termination of Operating Licenses for Nuclear Reactors," (1974). The radiological release criteria were documented in the AM (Navy, 2006) and are provided in Table 2.

3.1.2 *Unrestricted Radiological Release Criteria*

The NRC radiological release limit for unrestricted use was applied in assessing the results of the surveys. The results were analyzed to determine whether residual radioactivity, distinguishable from background radiation, resulted in a total effective dose equivalent (TEDE) to an average member of the critical (screening) group exceeded 15 millirem per year (mrem/yr) or the acceptable NCP risk management range of 10E-6 to 10E-4, and if the residual radioactivity had been reduced to levels that were ALARA. Per EPA (1997), the 15 mrem/yr limit equates to approximately 3E-04 increased lifetime risk. This radiological release process ensured that residual radioactivity did not result in individuals being exposed to unacceptable levels of residual radiation or radioactive materials.

The radionuclide-specific release criteria, referred to as derived concentration guidelines (DCGLs), used for the Parcel D-1 FSSs are equivalent to the ROC release criteria established in the AM (Navy, 2006) (Table 2). The DCGLs are presented in terms of surface activity concentrations and refer to average levels of radiation or radioactivity above background levels. The DCGLs for building surfaces are expressed in disintegrations per minute per 100 square centimeters (dpm/100 cm²) and the former building area and sites are expressed in pCi/g. Typically, each radionuclide DCGL corresponds to the release criterion; however, in the presence of multiple radionuclides, the DCGLs were adjusted using the unity rule. A detailed discussion of the release criteria for each building, building area, or former building site was provided in the individual FSS reports (Shaw, 2012ak and 2013b through 2013e; Appendices H, J, and L).

3.1.3 Investigation Levels

Investigation levels are specific measurement levels used to indicate whether additional investigation may be necessary and also serve as a quality control check. When determining an investigation level using a statistical-based parameter (e.g., standard deviation), the following may be considered:

- Survey objectives
- Underlying radionuclide distributions (e.g., normal, log normal, nonparametric)
- Data population descriptors (e.g., standard deviation, mean, median)
- Prior survey and historical information

When investigation levels were exceeded, the measurement was confirmed to ensure that the initial measurement/sample was actually greater than that particular investigation level. This involved taking further measurements to confirm the initial result and quantify the area of elevated residual radioactivity, if appropriate.

The investigation level for gamma surveys was established at the reference area mean plus 3-sigma (where sigma is the standard deviation of the gamma readings in the reference area). Because various instruments were used during survey activities, there were different investigation levels based on the parameters of each individual instrument. Currently, there are no established release criteria based on gamma radiation readings alone. Gamma surveys were performed as an added measure to identify areas of gross contamination that could be an immediate health and safety concern and to help detect any anomalies, such as gamma-emitting sources, that may not emit alpha or beta radiation.

3.1.4 Survey Procedures

Survey procedures were performed in accordance with the Shaw standard operation procedures presented in the APP/SSHP/RPP (Shaw, 2010a) and the D-1 Radiological Work Plan (Shaw, 2010b). In Building 274, Class 1 SUs were comprised of the floors and walls less than or equal to 2 meters above the respective floor areas with a maximum area of 100 square meters (m²), and Class 2 SUs included the upper portion of the walls and ceiling. For soil SUs, Class 1 SUs had a maximum area of 1,000 m². Class 2 SUs were established in 15-foot buffer areas around each impacted area. On South Pier and GMP, additional release surveys were performed on remaining concrete infrastructure comprised of remaining building foundations, pier walls, vaults and manholes, and other features. Using a random start point in each SU, systematic data collection locations were laid out in a grid pattern using visual sampling plan (VSP) software.

Class 1 SUs received 100 percent surface scan coverage and Class 2 SUs received a minimum of 50 percent. Scanning activities were performed in each SU to identify elevated levels of radiation, relative to corresponding background levels from the selected reference area. Alpha and beta scan data were evaluated to determine whether any readings of the interior buildings, foundations, or features exceeded the release criteria. The data were then evaluated to determine whether any measurements exceeded 80 percent of the release criteria and to identify patterns or areas where additional biased measurements were needed or appropriate. Gamma scan data were reviewed to identify any measurements that exceeded the investigation limit of 3-sigma plus background. In areas where elevated measurements were noted, biased measurements were collected and evaluated, as appropriate. Gamma measurements that exceeded the investigation limit were compared to the beta measurements to determine whether additional follow-up measurements and/or sample collection were necessary. The majority of the readings logged above the investigation level were attributed to a disparity in the naturally occurring radioactive materials between the reference area and the SUs.

Following scanning and data evaluation, alpha, beta, and gamma static measurements were logged at discrete points in each SU. Basic statistical quantities were calculated for the data in an effort to identify patterns, relationships, and anomalies. The measurement locations were established using VSP software based on a random start point and a systematic grid pattern.

In areas with exposed soil, soil samples were collected from discrete systematic static measurement locations, processed, and analyzed by gamma spectroscopy following scanning activities. The data provided by the HPNS on-site gamma spectroscopy laboratory was used as screening-level data intended to guide remediation work only. Following receipt of results below the radiological release criteria, 100 percent of the soil samples were sent to the subcontracted off-site laboratory (TestAmerica St. Louis) for final analysis.

A minimum of 10 percent of the FSS samples were analyzed for ^{90}Sr . For samples collected from soil SUs, analysis for ^{239}Pu (and analysis for ^{232}Th in the Former Building 313, 313A, and 322 Sites) was required for samples with elevated ^{137}Cs and/or ^{90}Sr . Because these sample locations were subject to remediation, the contingent data was therefore not typically considered in the final dose evaluation for the SUs. The on-site and off-site laboratory analytical reports for each soil sample are provided in the appendices of the FSS reports indexed in Appendices H, J, and L.

In addition, for the one impacted building that remains standing within the WA (Building 274), swipe samples from building surfaces were collected at each systematic static location to assess the presence of alpha and beta radioactive contamination that would be readily removable from a surface.

Data collected during the survey activities were validated for integrity through verification of numerical results. Following collection of the daily survey data, the results were reviewed by the Radiological Control Supervisor (RCS) to verify completeness, ensure that the data presented were free of numerical or transcription errors, and confirm that established procedures and methodology were followed. In addition, the collected data were reviewed by the RCS and examined by the Radiological Safety Officer (RSO) to determine whether investigative levels had been exceeded.

Swipe, solid, and soil samples were analyzed by the on-site and off-site laboratories and the resulting data were assessed by the RSO to determine whether the objectives of the survey process were met. The assessment process consisted of four data phases:

1. Verification
 1. Validation
 2. Evaluation
 3. Quality assessment

In addition, results from the off-site and on-site laboratory analyses were reviewed to ensure that the radioactivity for FSS samples for all ROCs met the release criteria. Detailed discussions of the assessment process and the off-site and on-site laboratory data are provided in the respective FSS reports (Shaw, 2012ak and 2013b through 2013e; Appendices H, J, and L). The scan readings, static measurements, and swipe sample results are also provided in the FSS reports.

3.1.5 Dose and Risk Modeling

Two dose models were used to perform dose and risk modeling at the sites. For Building 274, the dose model was based on the “Building Occupancy” scenario. For soil SUs, the resident farmer dose model was used.

The dose model for the critical group for unrestricted radiological release of the sites was based on the default residential (or “Building Occupancy”) scenario for buildings using RESRAD-Build software. The default Building Occupancy scenario included external, ingestion, and inhalation exposure pathways. For all ROCs, a nondistributed TEDE scenario was selected as the most conservative approach. For all parameters, the most conservative scenarios were selected and assumed that persons living in the building would be exposed without use restrictions.

The dose model for the critical group for unrestricted radiological release of the sites was based on the default residential farmer scenarios in RESRAD using the most current version of the software at the time of the exercise. RESRAD analyzes the various pathways and scenarios

through which exposures could occur. These pathways include external and inhalation exposures and exposure from ingestion pathways including:

- Drinking water
- Food grown with contaminated irrigation water
- Food grown on contaminated soil
- Fish
- Inadvertent ingestion of soil

Land-based foods considered were:

- Leafy and root vegetables
- Fruit
- Grain
- Beef and poultry
- Milk
- Eggs

The default residential farmer scenario was used with only two minor changes:

- The actual surface area of each site was used instead of the 10,000-m² default area
- The net concentrations above background were used

This is the most conservative scenario as it assumes that persons living on the site can use the land for any purpose without use restrictions.

Modeling for each site was performed using the larger of the MDL and reported activity concentrations. The activities used to model each radionuclide present in background (e.g., ²²⁶Ra) were based on the isotopic net concentration. This approach was used to determine the maximum possible dose that one would expect to receive if the reported activities were actually at the MDL.

3.1.6 As Low As Reasonably Achievable

ALARA is a philosophy for striving for excellence in the practice of health physics and is an important aspect of radiation-safety regulations. The ALARA process was followed for the Parcel D-1 sites. Founded in the professional judgment of radiation-safety managers and

personnel, the ALARA concept cannot be used to measure whether or not a particular radiation-safety program is adequate in comparison with other programs and does not provide a numerical limit. For Parcel D-1, the ALARA process was implemented through identification of potential radiological impacts, a review of the radiological impacts, and the performance of qualitative and quantitative ALARA analyses.

Each of the radiologically impacted Parcel D-1 sites were subjected to ALARA review before fieldwork was initiated to ensure that radiation exposures to workers, the public, and the environment met ALARA principles. ALARA reviews were conducted for all operations, practices, and procedures with the potential for individual or collective doses.

To determine environmental impacts from radiological activities, the following methods were implemented for the Parcel D-1 sites:

- Field monitoring and sampling to identify areas that may require remediation (including air, swipe, and soil samples)
- Control of the radiologically impacted sites
- Air monitoring during remedial actions
- Frisking personnel and examining equipment leaving the Radiologically Controlled Area (RCA)
- Use of release criteria that equate to dose and risk
- Review of historical radiological operations to support investigations
- Characterization of the sites to ensure complete removal of radioactive material exceeding the release criteria, if identified
- Dosimetry worn by personnel to measure time-averaged doses from gamma radiation

Data analyses were performed for alpha, beta, and gamma radiation for each Parcel D-1 site to ensure that any possible radioactive contamination was identified. Following the completion of the survey activities, the qualitative radiological impacts from operations in the field were evaluated by performing dose and risk assessments. These results were provided to the RASO and regulatory agencies for review.

Based on qualitative ALARA analyses, site survey projects that could cause the potential dose to the public to exceed 1 millirem (individual) or 10-person-rem (collective) are subjected to quantitative ALARA analyses. Quantitative ALARA analyses include societal, technological, economic, and public policy considerations.

To date, no operations at Parcel D-1 have resulted in an individual dose to the public greater than 1 millirem or a collective dose greater than 10 person-rem. Based on these estimates of dose to the public from the survey work performed, only qualitative ALARA analyses were required for Parcel D-1. The majority of the data and analysis used for environmental ALARA evaluations were developed as part of the routine work processes. Qualitative ALARA analyses performed for the Parcel D-1 sites resulted in the following:

- No alpha or beta measurements above the investigation levels
- None of the alpha, beta, or gamma measurement results identified residual radioactivity above the release criteria for any ROC
- No personnel dosimetry badges processed identified a gamma dose above the background level

A complete discussion of the ALARA process was provided in the individual FSS reports for each site discussed in this Parcel D-1 Radiological RACR.

3.2 Removal of Storm Drain and Sanitary Sewer System

Removal of the SD and SS system was performed in accordance the D-1 Sewer Work Plan (Shaw, 2010c) and the D-1 Sewer Design Plan (Shaw, 2010d). Removed SD and SSs are showing in Figure 4. Removal of the SD and SS system was performed to achieve free-release of Parcel D-1. In accordance with the SUPRA SSSD (TtEC, 2011b), the SUPRs (Shaw, 2012c through 2012aj; Appendices H through L) were generated for each segment of SD and SS removed. SUPRs for each trench SU are indexed in Appendices H through L.

The purpose of the removal action was to meet the RAO and achieve radiological release for unrestricted use of the identified areas in Parcel D-1 (Figure 2). The locations of the SD and SS piping in Parcel D-1 are shown on Figure 4. As-Built drawings are included in Appendix C. The RAO was developed to protect public health and welfare, and the environment and to preclude potential exposure to future residents or workers by physically removing the existing SD and SS lines and disposing of the associated radioactive contaminants that exceed the radiological release criteria or remediation goals. Meeting the RAO substantially eliminates the potential migration of contaminated material within or outside of the systems at HPNS. The radiological release criteria for the SD and SS removal action were identified in the AM (Navy, 2006) and are provided in Tables 2 and 3.

Parcel D-1 was divided into six WAs (13, 24, 25, and 28 through 30) to expedite the SD and SS TCRA schedule and to ensure accurate tracking of trench segments, piping, and SUs throughout the excavation, remediation, and backfill iterative cycle. This Radiological RACR does not cover work conducted in WA 13, which housed the RSY 2 (operated by the Basewide Radiological

Contractor). A total of 12,957 linear feet of SD and SS pipes were excavated in WAs 24, 25, and 28 through 30 during the removal activities (Figure 4). Table 5 summarizes the data for each trench SUs including the WA location, associated trench segments, area and length, and relevant data related to number of samples collected, contamination identified, remediation performed, and dose and risk modeling results.

3.2.1 Pre-Excavation Field Activities

Pre-excavation field activities for the Parcel D-1 removal action commenced in September 2010.

3.2.1.1 Pre-Mobilization Conferences

Prior to mobilization, a field kick-off meeting was conducted on September 16, 2010. The attendees included the Navy RPM, the Navy Lead RPM, RASO, the Resident Officer in Charge of Construction (ROICC), the Caretakers Site Office (CSO), and Shaw personnel. During the kick-off meetings, site-specific activities and tasks required for soil sampling, excavation, and soil screening were addressed. The meeting minutes from the kick-off meeting is included in Appendix A.

3.2.1.2 Utility Survey

Following a review of the as-built drawing of the area, a utility survey was performed using industry-standard geophysical electromagnetic instrumentation. On September 28 and 29, 2010, the utility survey was performed over the areas to be excavated. SD and SS line locations were marked using appropriately colored paints, stakes, and flags.

3.2.1.3 Initial Topographical Survey

A pre-excavation topographic survey was performed to establish horizontal and vertical controls, and to assess the pre-removal site topographic features, such as high and low points and the limits of the excavation areas. This information provided the basis for calculating the excavation quantities.

3.2.1.4 Initial Radiological Surface Screening

Prior to mobilization of heavy equipment, an initial radiological surface survey was completed in accessible areas. The initial radiological surface survey consisted of a high-density gamma scan performed using sodium iodide (NaI) detectors and supported by global positioning system (GPS) equipment. The purpose of the radiological surface survey was to identify surface and near-surface (less than 30 centimeters, 12 inches below ground surface [bgs]) radioactive materials for removal prior to excavation activities to prevent the spread of contamination by the project equipment. The radiological surface survey encompassed the excavation areas and extended beyond to include the laydown areas.

3.2.1.5 Site Support Area and Preparation

Following mobilization of equipment and materials to Parcel D-1, a defined working area was established surrounding the site and support area and posted as a RCA (Figure 2). The RCA was delineated with temporary fence panels and appropriate signage. A project support area was established to provide for the temporary storage of tools, equipment, materials, employee break area, and employee parking. Previously established support areas included office trailers and employee parking located approximately 1 mile north of the site at 200 Fischer Avenue.

Radiological screening of personnel, equipment, and materials was executed when exiting the work area RCA. Work performed in or near roadways was coordinated with the task-related Site Supervisor, and other site users to implement appropriate traffic control and road closures as needed for site personnel safety. Additional coordination was performed to permit routine access into the Shaw work area/RCA to the basewide groundwater monitoring contractors for quarterly groundwater sampling events, and other Navy contractors.

3.2.1.6 Mobilization

Shaw mobilized to the site on September 20, 2010. Mobilization activities included site preparation, movement of equipment and materials to the site, and orientation and training of field personnel. Throughout the months leading up to field mobilization, the RPM and Navy Contracting Officer, and representatives from the ROICC, the RASO, and the CSO were notified regarding the planned schedule and commencement of groundbreaking excavation activities.

Upon receipt of the appropriate records and authorizations, field personnel, temporary facilities, and required construction materials were mobilized. The temporary facilities included restrooms, security fencing, runoff controls, and two secure connex-type storage boxes for short- and long-term storage of materials.

3.2.1.7 Stormwater and Erosion Control

The overall site level was calculated in the SWPPP and the site was determined to be Risk Level 2 based on the site-specific sediment risk (medium risk) and receiving water risk (low risk) (Shaw, 2010a).

Fencing and appropriate perimeter best management practices (BMPs) were installed along the entire land perimeter of Parcel D-1 prior to the start of excavation activities. Fiber rolls, silt fences, and/or sandbags, were installed along the inland fenced perimeter to prevent stormwater from entering or leaving project work zones. Prior to commencing excavation, fiber rolls or other BMPs were placed down slope of the excavation area. The BMPs minimized or prevented sediment entrainment in runoff entering the Bay.

Sandbags, fiber rolls or straw bale berms were installed around proposed sewer removal excavations where runoff may have led to open SDs or the Bay, as well as to prevent stormwater run-on from areas outside of the excavation. Any SDs located within 50 feet of the excavations were surrounded with sandbags and the SD covered with filter fabric.

Asphalt and road base material was removed. Excavated asphalt was stockpiled and processed on site. Sandbags, straw bales, or silt fences were placed around perimeter of the stockpiles. Excavated soil from trenches were stored inside the RSY's radiological processing. A decontamination pad was located on-site for decontaminating equipment used to excavate, load or haul soil from trenches, the RSY, or other backfill sources on HPNS. The decontamination pad was bermed and lined. As needed, sandbags or straw bales were placed in drainage control swales and diversions were made at drainage control discharge points or areas with high probability of erosion. Following removal of the SD and SS systems, temporary stormwater swales capable of handling two year period storm were installed to manage stormwater runoff within Parcel D-1 as discussed in Section 9.0

Buildings on the GMP and South Pier were demolished. Demolition and load-out of debris was conducted with BMPs in place. Demolition waste streams were segregated and transported off site for salvage or disposal using closed-top bins and covered trucks unless extremely large pieces of debris (such as overhead crane beam) were too large to place into covered vehicles. Any construction debris stockpiles on site were surrounded with sandbags, fiber rolls, or straw bales.

The Qualified SWPPP Practitioner conducted quarterly, weekly, pre-storm, post-storm, and 24-hour interval inspections in accordance with the SWPPP (Shaw, 2010a). Routine BMP maintenance and repairs were completed within 48 hours.

3.2.1.8 Fugitive Dust

Dust control measures were implemented, as appropriate and necessary, beginning during the site mobilization and continuing through site restoration and demobilization. The following control measures were implemented:

- Actively used unpaved roads in the project construction site were watered at a frequency sufficient to maintain adequate moisture.
- Vehicular traffic was restricted to speeds of 15 mph within the construction site and 5 mph in working areas.
- Bulk-loaded trucks used for transportation of soil and other heavy earthmoving equipment were not permitted to exit the construction sites, except through the track-out prevention control point.

- Unpaved active portions of the construction site were watered to minimize windblown dust and dust generated by vehicle traffic.
- During soil removal, surface soil was pre-wetted in the area to be removed prior to starting the activity. Soil-moisture content was sufficiently maintained during excavation activities to minimize fugitive dust creation.
- Unpaved, inactive portions of the area under construction were watered to minimize fugitive dust creation.
- The height from which excavated soil was dropped into trucks was minimized.
- Trucks were equipped with tarping systems to cover loads during soil transport.
- Truck traffic was minimized to the shortest allowable haul routes.
- Backfill materials were wetted to maintain moisture. Loader buckets were emptied slowly and drop heights from loader buckets were minimized. A water truck was dedicated to backfilling operations.
- Installed temporary drainage swales to direct overland stormwater runoff to outfalls along the Bay.

3.2.1.9 Air Monitoring

Prior to commencing earthmoving activities, air monitoring stations were set up upwind and downwind of the construction activities. Air monitoring was performed in accordance with the D-1 Execution Plan (Shaw, 2010a). The project monitored and sampled for PM10 (particulate matter less than 10 microns in diameter), total suspended particulates, lead, manganese, asbestos, and ROCs during earthmoving activities. Field operations were conducted to ensure that the derived airborne concentrations in Table 4 were not exceeded. Construction activities met the established threshold limit values through the entire project. Results from the air monitoring effort are provided in Appendix B of this report.

3.2.2 Storm Drain and Sanitary Sewer Excavation

Excavation of the SD and SS lines commenced on October 8, 2010, in WA 24. Excavation was completed on March 22, 2012. In total, 12,957 linear feet of trench (inclusive of soil, pipes, and manholes) shown on Figure 5 was excavated during the removal activities. Although not identified on the Design Drawings (Shaw, 2010f and 2010g), an additional 3,114 linear feet of SD and SS systems piping was discovered during the excavation activities and removed in accordance with the D-1 Sewer Work Plan (Shaw, 2010c). These previously unidentified pipelines were assigned trench segment identification numbers and incorporated into appropriate trench SUs for the radiological survey activities. Table 5 provides the trench SU data and Table 6 identifies each trench SU and associated trench segments, type of trench segments (SS or SD),

pipng material and diameter, and minimum and maximum depths for both the trench excavation and the pipes.

3.2.2.1 Excavated Soil

Excavated soil from the trenches was transferred to the Navy's Basewide Radiological Contractor's RSYs. The excavated soil was placed on screening pads for radiological processing. Each screening pad with soil derived from excavation of the Parcel D-1 SD and SS lines was assigned a unique ESU number. In total, 1,832 truckloads (approximately 18,320 cubic yards [cy]) of excavated soil associated with SD and SS trenches were removed from Parcel D-1 and transferred to RSY2, RSY3, and RSY4 for radiological processing. Table 7 summarizes each truckload of excavated soil, the associated screening pad and unique ESU number, and the date the soil was excavated and hauled to the Basewide Radiological Contractor's RSY.

3.2.2.2 Excavated Soil Radiological Processing

A total of 78 screening pads containing excavated soil derived from the Parcel D-1 SD and SS trenches were processed within the Basewide Radiological Contractor's RSYs during the removal action. Table 7 presents the processing and disposition summary of the excavated soil. Radiological processing of the excavated soil was performed by the Basewide Radiological Contractor.

Prior to radiological processing in the RSYs, the excavated material from Parcel D-1 was spread on 1,000-m² screening pads in lifts not exceeding a thickness of 6 inches. Radiological surface scans were conducted for each screening pad of excavated material. These high-density gamma scans were performed with the use of gamma scintillation detectors supported by GPS equipment. This survey process resulted in a 100 percent surface scan. Radioactive materials identified during the screening activities were collected, segregated, and stored in appropriate containers for subsequent disposal by the Navy's LLRW contractor. Gamma scan data for each ESU used as backfill material was maintained by the Basewide Radiological Contractor.

Areas of soil placed on the screening pads that showed the potential presence of radiation levels greater than the established investigation limits were further evaluated, and biased soil samples were collected, as appropriate, and submitted the laboratory for analysis. The systematic sample collection locations for each overburden SU or ESU were based on a random start point using the most current version of VSP software. A minimum of 18 systematic soil samples were collected from each overburden SU or ESU and analyzed by the on-site laboratory using gamma spectroscopy. Any soil associated with a sample result exceeding a radionuclide-specific release criterion was remediated. The release criteria for the SD and SS TCRA are provided within the SUPRA Revision 3 (TtEC, 2011a) and SUPRA SSSD (TtEC, 2011b).

Following the removal of contaminated soil on the screening pads, verification soil samples were collected and analyzed. If additional contamination was identified, remediation was performed. This process was performed iteratively until the soil samples analyzed after each remediation event showed results less than the radionuclide-specific release criterion. Following the collection and analysis of the 18 FSS samples, excavated soil was stockpiled outside of the RSYs pending receipt of the ⁹⁰Sr analytical results with the concurrence of the RASO. Once the ⁹⁰Sr analytical results were received and evaluated against the release criteria, a data package was prepared for the RASO review. The RASO then concurred with whether or not the excavated soil was acceptable for use as backfill material. Only excavated soil that received concurrence from the RASO and were not chemically contaminated based on IR Program site analytical results were used as backfill material in the Parcel D-1 trench SUs.

Soil samples collected from the RSY pads were analyzed by gamma spectroscopy in the on-site radiological laboratory with 10 percent analyzed for ⁹⁰Sr, and 10 percent sent off site for quality assurance verification. The soil that exceeded the radiological release criteria was not approved for reuse as backfill. This soil was placed in LLRW bins for disposal by the Navy's LLRW contractor.

Final data from ESUs were provided by the HPNS on-site radiological laboratory, per the SUPRA Revision 3 (TtEC, 2011a). The analytical data from the screening activities at all ESUs are presented in each trench SUPR. The analytical data packages prepared by the Basewide Radiological Contractor for ESUs supporting Parcel D-1 excavated soil evaluation are presented in the SUPRs (Shaw, 2012c through 2012aj; Appendices H through L).

3.2.3 Storm Drain and Sanitary Sewer Systems Piping

The Parcel D-1 SD and SS pipes and manholes (collectively called piping) were removed during excavation of the trenches. The majority of the piping was crushed or disintegrated during the removal activities and the debris was transferred along with the surrounding soil to the RSYs for radiological processing. SD and SS piping that was not crushed or crumbled during excavation activities were placed on plastic sheeting pending further investigation and sampling. In total, 86 manholes and 12,957 linear feet of pipe were removed and staged during the Parcel D-1 removal activities.

SS pipes in Parcel D-1 consisted of 2-inch to 36-inch diameter concrete, VCP, or metal located at depths ranging from 1 foot to 8 feet bgs. The Parcel D-1 SD lines consisted of 2-inch-to 36-inch-diameter concrete, VCP, metal, corrugated metal pipe (CMP) or PVC, or concrete-encased VCP located at depths between 1 foot and 8 feet bgs. The materials forming the sidewalls and bottom of the manholes were concrete, brick, or a combination of the two. Table 6 identifies each trench SU and associated trench segment, type of trench segment (SD or SS),

piping material and diameter, and minimum and maximum depths for both the trench excavation and the pipes.

3.2.3.1 Pipe and Manhole Radiological Surveys

Radiological survey activities were performed during the Parcel D-1 removal activities for a total of 86 manholes and 12,957 linear feet of pipe. These radiological surveys consisted of a 100 percent surface scan on each pipe section and the materials forming the sidewalls of each manhole. In addition, two static measurements were recorded, and two swipe samples were collected and submitted to the on-site laboratory for analysis. The collected data were reviewed by the RSO to determine whether investigative levels had been exceeded. The results of these radiological surveys are provided in the SUPRs (Shaw, 2012c through 2012aj; Appendices H through L). The release criterion was 100 dpm/100 cm² for alpha contamination and 1,000 dpm/100 cm² for beta contamination

3.2.3.2 Pipe and Manhole Sediments

A sufficient volume of sediment was available for sample collection in 9 manholes and 24 sections of pipe during the Parcel D-1 removal action (Table 8). A total of 9 sediment samples were collected from manholes and 24 sediment samples were collected from pipes. The sediment samples were analyzed in the laboratory using gamma spectroscopy. The highest concentration of ¹³⁷Cs and ²²⁶Ra contamination identified in the Parcel D-1 sediment samples was 0.4798 and 1.4855 pCi/g, respectively. Pipes and manholes associated with sediment sample analytical results that exceeded the release criteria were placed in LLRW bins for off-site disposal by the Navy's LLRW contractor. Typically, radiological surveys were performed for the Parcel D-1 piping that did not contain contaminated sediments prior to final disposition. Table 8 summarizes the sediment samples, associated analytical results, and disposition of the associated piping. Radiological analytical results are available in Appendix M.

3.2.4 Extraneous Pipe

During the Parcel D-1 removal action, various pipes with the potential to be liquid-bearing were found while excavating the SD and SS systems. These extraneous pipes (EP) were assigned identification numbers and were "hot tapped" or breached to identify the presence of potential liquid or gas in accordance with the D-1 Sewer Work Plan (Shaw, 2010c).

A total of 29 EPs were identified during the Parcel D-1 TCRA. Radiological surveys were performed on the EP; however, sediment samples were not collected because sufficient volume of material was not available for analysis. The EPs are listed in Table 10, along with the survey identification number, sediment sample results, and disposition of each EP.

3.2.5 Piping Remaining in Place

The majority of the SD and SS pipe sections and manholes were excavated during the Parcel D-1 removal activities; however, one section of pipe was left in place following the completion of the removal action activities. WA 24 pipe section 06-D28-32-1C leading to the Berth 15 outfall from Manhole MH744 was left in place to minimize the structural impact to the degrading berth wall resulting from the removal process. Manhole 744 was left in place to permit clean out of trapped materials from the newly constructed tie ins of the connecting Morrell Street and Manseau Street swales. The interior of the remaining section and manhole were radiologically surveyed and sediment samples were obtained and analyzed. All results met radiological release criteria.

3.2.6 Storm Drain and Sanitary Sewer Trenches

Excavation of the SD and SS trenches commenced on October 8, 2010, in WA 24, and the last truckload of Parcel D-1 soil was excavated on March 22, 2012. The maximum depth of the excavated trenches ranged between 1 foot and 10 feet bgs (Table 6). In total, 12,957 linear feet of trench (inclusive of soil, pipes, and manholes) was excavated during the TCRA activities. Although not identified on the Design Drawings (Shaw, 2010f and 2010g), an additional 3,114 linear feet of trench (inclusive of soil and pipe) and 15 manholes were discovered during the excavation activities and removed in accordance with the D-1 Sewer Work Plan (Shaw, 2010c).

Thirty-four trench SUs were designated in the five WAs during the Parcel D-1 project activities as follows:

- WA 24
 - Trench SU 250 (SU 250)
 - Trench SU 251 (SU 251)
 - Trench SU 252 (SU 252)
 - Trench SU 253 (SU 253)
 - Trench SU 254 (SU 254)
 - Trench SU 255 (SU 255)
 - Trench SU 256 (SU 256)
 - Trench SU 257 (SU 257)
 - Trench SU 259 (SU 259)
 - Trench SU 261 (SU 261)
 - Trench SU 264 (SU 264)

- Trench SU 265 (SU 265)
- Trench SU 272 (SU 272)
- Trench SU 273 (SU 273)
- Trench SU 274 (SU 274)
- Trench SU 277 (SU 277)

- WA 25
 - Trench SU 283 (SU 283)

- WA 28
 - Trench SU 258 (SU 258)
 - Trench SU 262 (SU 262)
 - Trench SU 270 (SU 270)
 - Trench SU 271 (SU 271)
 - Trench SU 276 (SU 276)
 - Trench SU 278 (SU 278)
 - Trench SU 279 (SU 279)
 - Trench SU 280 (SU 280)
 - Trench SU 281 (SU 281)
 - Trench SU 282 (SU 282)

- WA 29
 - Trench SU 266 (SU 266)
 - Trench SU 267 (SU 267)
 - Trench SU 268 (SU 268)
 - Trench SU 269 (SU 269)
 - Trench SU 275 (SU 275)

- WA 30
 - Trench SU 260 (SU 260)
 - Trench SU 263 (SU 263)

Some trench SUs crossed boundaries and were assigned to the WA in which the majority of the excavation was physically located or were distinctly associated with a building/structure or former building site for presentation in this Radiological RACR. With the exception of SU 262, no trench SU exceeded 1,000 m² in exposed surface area. Detailed discussions for each of the Parcel D-1 trench SUs are provided in Sections 4.0 (WA 24) through 8.0 (WA 30) of this Radiological RACR and in its respective SUPR. The locations of the WAs and associated Parcel D-1 trench SUs are shown on Figures 2 and 5. The individual SUPRs (Shaw, 2012c through 2012aj; Appendices H through L) summarize the radiological activities performed for each excavated trench along with the WA location, associated trench segments, area and length, and relevant data related to number of samples collected, contamination identified, remediation performed, and dose and risk modeling results.

3.2.6.1 Trench Survey Activities

Numerous soil samples were collected from the sidewalls and bottoms of the 34 trench SUs that were designated following excavation of the SD and SS systems to determine whether radionuclide contamination was present above the release criteria. Systematic soil sample locations were identified for each round of sample collection using VSP software with a random start point on a triangular grid pattern. A minimum of 18 soil samples were collected from each trench SU and submitted under chain-of-custody to the laboratory for analysis by gamma spectroscopy. In addition, investigative samples were collected and analyzed, as needed, based on the results of trench survey activities and/or piping sediment sample analytical results. Soil samples were submitted to the HPNS on-site laboratory for analysis by gamma spectroscopy. The data provided by the HPNS on-site gamma spectroscopy laboratory was used as screening-level data intended to guide remediation work only. Following receipt of results below the radiological release criteria, 100 percent of the soil samples were sent to the subcontracted off-site laboratory (TestAmerica St. Louis) for final analysis. A minimum of 10 percent of the final samples were analyzed for total strontium (Sr).

During the Parcel D-1 removal action, 1,275 soil samples were collected from the 34 designated trench SUs and analyzed by the laboratory. Of these 1,275 soil samples, 629 were investigative and 646 were final systematic FSS soil samples. Throughout this Radiological RACR, “investigative” trench SU soil samples refers to any systematic, characterization, investigation, or verification soil sample that was not one of the final 18 FSS soil samples. As indicated in Table 5, the highest ¹³⁷Cs investigative soil sample analytical result collected from a trench SU was found in Trench SU 266 at 0.682 picocuries per gram (pCi/g) and the highest ²²⁶Ra investigative soil sample analytical result was identified in Trench SU 265 at 2.827 pCi/g. ⁹⁰Sr was detected in one sample from Trench SU 254 at 0.666 pCi/g.

3.2.6.2 Trench Survey Unit Remediation Activities

Radiological contamination identified by the laboratory in trench SU soil samples was remediated during the Parcel D-1 remedial actions. Based on the laboratory analytical results, approximately 140 cy of soil was remediated from the 34 designated trench SUs. The contaminated soil was placed in LLRW bins pending off-site disposal by the Navy's LLRW contractor. The LLRW bins were transported off site to either the U.S. Ecology facility in Idaho or the Energy Solutions facility in Clive, Utah.

Contaminant concentrations in trench SU soil ranged between 0.115 pCi/g and 0.682 pCi/g for ^{137}Cs and between 1.487 pCi/g and 2.827 pCi/g for ^{226}Ra . The majority of the contaminated soil remediated originated from Trench SUs 254 and 265 located in WA 24. Table 5 lists each Parcel D-1 trench SU, elevated ROCs, elevated soil sample results, and estimated volume of soil remediated.

3.2.6.3 Trench Survey Unit Final Status Survey Activities

The D-1 Sewer Work Plan (Shaw, 2010c) specified the work to be performed for the SD and SS FSS activities, the following documents were used as guidance in designing the FSSs:

- MARSSIM (DoD et al., 2000)
- *A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys (Draft Report for Comment)*, NUREG-1505 (NRC, 1998)
- *Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions Guide*, NUREG-1507 (NRC, 1997)

In general, FSSs for every excavated trench section included a 100 percent surface scan and systematic and biased static or direct measurements. Static surface radiation measurements were collected at each systematic sample location prior to the collection of the soil sample to identify the potential presence of gross contamination.

Systematic soil samples were collected from the sidewalls and bottom of each of the 34 designated trench SUs in Parcel D-1 after establishing a grid that did not exceed 1,000 m² over the exposed trench surface. A minimum of 18 systematic and discrete soil samples were collected from each trench SU and submitted to the laboratory for analysis by gamma spectroscopy. The data provided by the HPNS on-site gamma spectroscopy laboratory was used as screening-level data intended to guide remediation work only. Following receipt of results below the radiological release criteria, 100 percent of the soil samples were sent to the subcontracted off-site laboratory (TestAmerica St. Louis) for final analysis. A minimum of 10 percent of the final samples were analyzed for total Sr. The collected data were reviewed by the RSO to determine whether investigative levels had been exceeded and were submitted to the

RASO for concurrence. The laboratory analytical results were used for dose and risk modeling to facilitate regulatory agency concurrence for unrestricted radiological release. The radiological details for each of the 34 trench SUs were presented in the individual SUPRs (Shaw, 2012c through 2012aj; Appendices H through L).

During the Parcel D-1 trench SU FSS activities, a total of 1,308 systematic soil samples were collected and analyzed. The laboratory analytical results for the trench SU FSS soil samples were presented in the SUPRs (Shaw, 2012c through 2012aj; Appendices H through L).

3.2.7 Trench Survey Unit Dose and Risk Modeling

For dose and risk modeling efforts, SD and SS systems trench SUs were composed of two different types:

- Trenches
- Backfill material

Dose and risk modeling was performed for each of the 34 trench SUs using the default exposure parameters in *RESRAD, Version 6.5* (Argonne National Laboratory [ANL], 2009). The backfill material and the trench units were modeled separately using the larger of the MDL or reported activity concentrations. Radionuclide-specific release criteria were obtained from the AM (Navy, 2006).

The results of the modeling efforts for each of the 34 designated trench SUs in Parcel D-1 fall within the acceptable NCP risk management range of $10E-6$ to $10E-4$, which supports radiological free-release. Based on the dose and risk modeling results, the highest net dose to workers or members of the public as a result of exposures to residual radioactive material in soil on Parcel D-1 was identified in Trench SU 263 at 1.733 mrem/y with an excess lifetime cancer risk (ELCR) of $2.8E-05$. Modeling is discussed separately for each trench SU in this Radiological RACR and a complete discussion of the dose and risk modeling results was presented in each SUPR indexed in Appendices H through L. Table 3 presents the SD and SS removal action release criteria for each ROC including residual doses for both outdoor workers and residents. A summary of the dose and risk modeling results for each trench SU is provided in Table 5.

3.2.8 As Low As Reasonably Achievable

As described in the SUPRA Revision 3 (TtEC, 2011a) and SUPRA SSSD (TtEC, 2011b), the environmental ALARA process was implemented for each of the 34 trench SUs. The ALARA process was discussed in the individual SUPRs (Shaw, 2012c through 2012aj; Appendices H through L) provided in the SUPRA Revision 3 and SUPRA SSSD. ALARA analyses were performed based on recent estimates of dose to the public from HPNS operations. Based on

qualitative ALARA analyses, excavation projects that could cause the potential dose to the public to exceed 1 millirem (individual) or 10 person-rem (collective) are subjected to quantitative ALARA analyses. To date, no operations at HPNS have resulted in an individual dose to the public greater than 1 millirem or a collective dose greater than 10 person-rem. Final data from the Trench SUs met project dose and risk criteria. In addition, air sampling results did not exceed 10 percent of the derived air concentration and the processed personnel dosimetry badges did not identify a single gamma dose above background levels. A complete discussion of the ALARA process for each Parcel D-1 trench SU was provided in each SUPR (Appendices H through L).

3.2.9 Import Fill

The SD and SS removal action necessitated the importation of appropriate soil for use as backfill material under both of the following conditions:

- When insufficient radiologically released overburden material or excavated soil was available for these activities
- To account for the void created by the removed piping

Imported fill was used as backfill material in the majority of the trench SUs as a supplement to the radiologically surveyed and released overburden SUs or excavated soil. A complete discussion of the imported fill material was provided in the SUPRA SSSD (TtEC, 2011b) including soil radiological analytical test results and acceptance criteria. The import fill used as backfill material in Parcel D-1 was identified as “Jericho” soil in the SUPRA SSSD. The data for the import fill material is presented in Appendix O. Table 5 identifies the specific backfill material used in each trench SU and indicates whether the imported fill was used in addition to radiologically screened soil as the backfill material.

3.3 Worker Health and Safety

There were no Occupational Safety and Health Administration days-away cases (lost-time injuries or “OSHA recordable injury”) during the execution of this project. Upon completion of the project, Shaw safely worked over 790 days in the field.

4.0 Work Area 24

WA 24 is located at the northwest end of Parcel D-1 (Figure 2). It is bounded on the south and east by Parcel F and the Bay, on the west by Parcel G, and on the north and west by Parcel C. The radiological work activities performed for WA 24 included Trench SUs 250, 251, 252, 253, 254, 255, 256, 257, 259, 261, 264, 265, 272, 273, 274, and 277 and Building 274 and the Former Building 313, 313A, 322 Sites (Figure 5). The following sections summarize the work activities completed in WA 24 to support the recommended radiological release for unrestricted use of the Parcel D-1 property.

4.1 Trench Survey Unit 250

Trench SU 250 included trench segments 06-D24-00-6A, 06-D24-00-6B, 06-D24-00-6C, 06-D24-00-6E, 06-D24-48-6C, and 06-D24-48-6D and a volume of excavated fill material used for backfill. The location of Trench SU 250 is shown on Figure 5. Trench SU 250 is located along Manseau Street and is comprised of two discrete sections. The western section is bordered on the west by the Parcel D-1 boundary and on the east by Trench SU 251. The eastern section is bordered on the west by Trench SU 251 and on the east by Trench SU 253. The total surface area is approximately 5,317 square feet (ft²) (494 m²) of actual excavated trench, in varying depths between 6 and 8 feet bgs. Approximately 390 cy of soil was excavated from Trench SU 250.

4.1.1 Removal Action Activities

Excavation of Trench SU 250 commenced on October 3, 2010, in trench segment 06-D24-00-6A. A total of 39 truckloads (approximately 390 cy) of overburden soil and peripheral material were excavated during the removal action activities. Following the completion of excavation on January 19, 2011, Trench SU 250 exhibited an exposed surface area of 494 m² (5,317 ft²) and contained approximately 285 feet of SS and/or SD pipes. The maximum excavated depth ranged between 6 and 8 feet bgs.

A total of 285 feet of pipe and manholes MH727 and MH742 were excavated from Trench SU 250 and placed on plastic sheeting pending further activities during the Parcel D-1 removal action. Sufficient sediment for sample collection and analysis was found in trench segments 06-D24-00-6A and 06-D24-00-6E. The analytical results for the sediment samples collected from the trench segments did not indicate the presence of radioactivity above the release criteria for any ROC (Table 8). The sediment sample analytical reports are provided in Appendix M. The manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

Radiological surveys were performed on the staged pipe sections. No elevated results were identified for any of the piping surveyed. The final disposition of piping excavated from trench segments 06-D24-00-6A, 06-D24-00-6B, 06-D24-00-6C, 06-D24-00-6E, 06 D24-48-6C, and 06-D24-48-6D is provided in Table 6.

The original systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 250 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels equal to the MDA; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Thirteen of the 18 systematic samples reported ^{226}Ra levels greater than the MDA, and one result (06-PD1T-250-011) exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the initial 18 systematic samples were sent off site for total Sr as a surrogate for ^{90}Sr analysis. Two total Sr results were reported above the MDL; however, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the SU 250 excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. Two areas containing measurements above the scan investigation level were identified and re-investigated via biased static measurements. None of the follow-up static measurements were above the static investigation level; therefore, no further investigation was required. A summary of gamma scanning data is presented in Appendix B of the *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H).

Remedial activities were performed over an approximate 78.5-ft² area that encompassed the area represented by sample 06-PD1T-250-011. Soil was removed to a depth of 0.5 foot below the trench surface, resulting in the removal of approximately 1.4 cy of material that was disposed as LLRW. Six post-remediation samples (06-PD1T-250-022 through 06-PD1T-250-027) were collected at the original location and in the vicinity of sample 06-PD1T-250-011, and all results were below project release criteria, as shown in Table 3-2 of the *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H).

A second set of systematic samples was collected in SU 250 after remediation. The systematic sampling results for the project ROCs are summarized in Table 3-3 of the *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 250 Project Report*. Five of the 18 systematic samples reported ^{137}Cs levels equal to the MDA, and

two results (06-PD1T-250-103 and 06-PD1T-250-108) exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Thirteen of the 18 systematic samples reported ^{226}Ra levels greater than the MDA; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

The two systematic samples with elevated ^{137}Cs were also sent to the off-site laboratory for total Sr analysis as a surrogate for ^{90}Sr . One result for total Sr was reported above the MDL; however, neither result exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

Six pre-remediation samples (06-PD1T-250-119 through 06-PD1T-250-124) were collected to bound the areas represented by the elevated samples 06-PD1T-250-103 and 06-PD1T-250-108, and all results were below project release criteria. Remedial activities were performed over an approximate 50-ft² area that encompassed the area represented by sample 06-PD1T-250-103. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 1.9 cy of material that was disposed as LLRW. Seven post-remediation samples (06-PD1T-250-125 through 06-PD1T-250-130, and 06-PD1T-250-138) were collected at the original location and in the vicinity of sample 06-PD1T-250-103, and all results were below project release criteria as shown in Table 2. Remedial activities were performed over an approximate 202.5-ft² area that encompassed the area represented by sample 06-PD1T-250-108. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 7.5 cy of material that was disposed as LLRW. Eight post-remediation samples (06-PD1T-250-131 through 06-PD1T-250-137, and 06-PD1T-250-139) were collected at the original location and in the vicinity of sample 06-PD1T-250-108, and all results were below project release criteria as shown in Table 2.

4.1.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 250 remained in place following the completion of the removal action.

4.1.3 Final Status Survey Summary

A total of 18 FSS soil samples were collected from Trench SU 250 on July 7, 2011, and submitted to the HPNS on-site radiological laboratory for analysis. The final set of systematic samples were collected from Trench SU 250 following the second remediation, and the data from this sampling round were used for the dose modeling presented in this report. The final systematic sampling results for the project ROCs are summarized in Table 3-6 of the *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H). One of the 18 systematic samples reported a ^{137}Cs level equal to the MDL; no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDA; no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g). Three of the 18 systematic samples were sent to the off-site laboratory for total Sr as a surrogate for ^{90}Sr analysis. No total

Sr result was reported above the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 250 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 250 were 0.043 pCi/g for ^{137}Cs , 0.189 pCi/g for ^{90}Sr , and 0.113 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.040 pCi/g for ^{137}Cs , 0.153 pCi/g for ^{90}Sr , and -0.143 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 250 resulted in a maximum above-background dose of 1.8 mrem/yr and an ELCR of 3E-05. The model of Trench SU 250 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 250 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 250 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 250 resulted in a maximum above-background dose of 1.8 mrem/yr and an ELCR of 3E-05. The model of Trench SU 250 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H) was issued in September 2012.

4.1.4 Backfill Activities

ESUs 354 (100 cy), 356 (30 cy), 357 (100 cy), 384 (50 cy), and 389 (110 cy) were used to backfill Trench SU 250. Final data from ESUs 354, 356, and 357 were provided by the on-site laboratory, per the SUPRA Revision 3 (TtEC, 2011a). Final data from ESUs 384 and 389 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data from the screening activities at these ESUs are presented in Tables 3-7 through 3-11 of the *Final Survey Unit 250 Project Report* (Shaw, 2012c; Appendix H). The analytical data packages for all ESUs are presented in Appendix C of the *Final Survey Unit 250 Project Report*.

4.2 Trench Survey Unit 251

Trench SU 251 included trench segment 06-D24-00-6A and a volume of excavated fill material used for backfill. The location of Trench SU 251 is shown on Figure 5. Trench SU 251 is located along the western boundary of Parcel D-1 along Manseau Street. The footprint of Trench SU 251 was 131 feet in length (40 meters). The total excavated surface area was approximately 3,233 ft² (300 m²) with excavation depths varying between 8 and 10 feet bgs. Approximately 270 cy of soil were excavated from Trench SU 251.

4.2.1 Removal Action Activities

Excavation of Trench SU 251 commenced on November 4, 2010, in trench segment-06-D24-00-6A. A total of 27 truckloads (approximately 270 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 131 linear feet of 27-inch diameter SD pipe was removed from Trench SU 251. No manhole was removed from Trench SU 251. Pipe was found in trench between 7 and 9 feet bgs (Table 6). The majority of the pipe sections were excavated, removed, and placed on plastic sheeting prior to radiological survey and clearance. Sufficient sediment for sample collection and analysis was found in 06-D24-00-6A pipe sections. The analytical results for the sediment samples collected from trench segment 06-D24-00-6A pipes did not indicate the presence of radioactivity above the release criteria for any ROC (Table 8). The sediment sample analytical reports are provided in Appendix M.

Radiological surveys were performed on staged pipe sections. No elevated results were identified for any of the piping surveyed. The final disposition of piping excavated from trench segment 06-D24-00-6A is provided in Table 6. Following radiological release, pipe sections were disposed of as general construction debris.

4.2.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 251 remained in place following the completion of the removal action.

4.2.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (Pacific Northwest National Laboratory [PNNL], 2010). Final systematic samples were collected from 18 locations on December 13, 2010, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 251 Project Report* (Shaw, 2012d; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of *Final Survey Unit 251 Project Report*. One of the 18 systematic samples reported a ^{137}Cs level greater than the MDL; the result did not exceed the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g). Two of the 18 systematic samples were sent to the off-site laboratory for Sr as a surrogate for ^{90}Sr analysis. Both samples were reported as below the MDL, and therefore, were below the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 251 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 251 were 0.039 pCi/g for ^{137}Cs , 0.136 pCi/g for ^{90}Sr , and 0.672 pCi/g for ^{226}Ra . The trench SU average net residual radioactivity concentrations were 0.040 pCi/g for ^{137}Cs , 0.209 pCi/g for ^{90}Sr , and 0.614 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 251 resulted in a maximum above-background dose of 1.8 mrem/yr and an ELCR of 3E-05. The model of Trench SU 251 resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 251 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 251 Project Report* (Shaw, 2012d; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 251 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 251 resulted in a maximum above-background dose of 1.8 mrem/yr and an ELCR of 3E-05. The model of Trench SU 251 resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 251 Project Report* (Shaw, 2012d; Appendix H) was issued in September 2012.

4.2.4 Backfill Activities

ESUs 354 (50 cy) and 356 (220 cy) were used to backfill Trench SU 251. Final data from ESUs 354 and 356 were provided by the on-site laboratory, per the SUPRA Revision 3 (TtEC, 2011a). The analytical data from the screening activities at ESUs 354 and 356 are presented in Tables 3-2 and 3-3 of *Final Survey Unit 251 Project Report* (Shaw, 2012d; Appendix H), respectively. The analytical data packages prepared by the Basewide Radiological Contractor for ESUs 354 and 356 are presented in Appendix C of *Final Survey Unit 251 Project Report*. No imported fill material was used to backfill Trench SU 251.

A stormwater swale was constructed on top of the footprint of Trench SU 251. The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench; follow by a layer of ½-inch to 2-inch diameter drain rocks.

4.3 Trench Survey Unit 252

Trench SU 252 included trench segments 06-D24-00-6E, -6F, -6G, -6H, -6I, -6K, -6L, -7A, -8A, and -8C, 06-D24-32-7A, 06-D24-32-8A, and 06D24-48-6F and volumes of excavated and imported fill material used for backfill. The location of Trench SU 252 is shown on Figure 5.

Trench SU 252 is located along Manseau Street and is comprised of five discrete sections. The western-most segment is bordered on the west by Trench SU 253 and on the east by Trench SU 255, and the next segment to the east is bordered on the west by Trench SU 255 and on the east by Trench SU 257. The next segment to the east is bordered on the west by Trench SU 257 and on the east by Trench SU 259, and the section furthest east is bordered by Trench SU 259. The total excavated surface area was approximately 6,257 ft² (581 m²) with excavation depths varying between 3 and 5.4 feet bgs. Approximately 530 cy of soil were excavated from Trench SU 252.

4.3.1 Removal Action Activities

Excavation of Trench SU 252 commenced on November 4, 2010, at MH730, and removal of the pipe, manholes, and soil was completed on January 25, 2011. A total of 53 truckloads (approximately 530 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 317 linear feet of pipe was removed from Trench SU 252. Pipe was found in the trench between 2 and 4.4 feet bgs. Table 6 summarizes the type, material make, and size associated with each pipe segments in Trench SU 252. Majority of the RCP or metal pipe sections were excavated out and placed on plastic sheeting pending further investigation. All removed metal pipes were disposed of as LLRW, whereas all RCP sections were released and disposed of as general construction debris. Pipes or portions of the pipe that were crushed and were less than 6-inch in any directions were sent to the Basewide Radiological Contractor's RSY2 along with the excavated soil. All VCPs were crushed during excavation and were sent to the Basewide Radiological Contractor's RSY2 along with excavated soil.

Three manholes were excavated from Trench SU 252, identified as MH729, MH730, and MH743 (Table 9). These three manholes were excavated and placed on plastic sheeting pending radiological survey and clearance. Insufficient sediment was found in the manholes for sample collection and analysis. The manholes were radiologically surveyed. MH729 and MH730 were disposed as LLRW and MH743 was released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

A 28-foot section of SD pipe, originally identified as 06-D24-00-6J on the D-1 Sewer Design Plan (Shaw, 2010c) was not found during excavation. It was labeled as "abandoned" on the existing site drawing and is believed to have been removed previously.

Sufficient sediment for sample collection and analysis was found in the four pipe sections (Table 8). The analytical results for two of the three sediment samples collected from pipe sections from 06-D24-6K did not indicate the presence of radioactivity above the release criteria for any ROC. One sediment sample collected from trench segment 06-D24-00-6K identified

^{137}Cs activity above the release criterion at 0.131 pCi/g. The sediment sample collected from the pipe section removed from trench segment 06-D24-00-6H identified ^{137}Cs activity above the release criterion at 0.2599 pCi/g. Due to the presence of ^{137}Cs activity above the release criterion in two pipe sections excavated from trench segments 06-D24-00-6H and 06-D24-00-6K, sediment samples with identified ^{137}Cs activity were sent to the off-site laboratory for total Sr analysis. The off-site analytical results for the two ^{137}Cs elevated samples did not indicate the presence of Sr activity above the release criterion. The sediment sample analytical reports are provided in Appendix M. The 06-D24-00-6H and 06-D24-00-6K pipe sections containing contaminated sediment were placed in LLRW bin for disposal by the Navy's LLRW contractor.

4.3.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 252 remained in place following the completion of the removal action.

4.3.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 20 locations on March 22, 2011, and April 14, 2011, and submitted to the basewide laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 252 Project Report* (Shaw, 2012e; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of *Final Survey Unit 252 Project Report*. One of the 20 systematic samples reported ^{137}Cs levels equal to the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Nineteen of the 20 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 20 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for (^{90}Sr). No results for total Sr were reported above the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 252 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 252 were 0.042 pCi/g for ^{137}Cs , 0.149 pCi/g for ^{90}Sr , and 0.710 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.037 pCi/g for ^{137}Cs , 0.144 pCi/g for ^{90}Sr , and 0.387 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 252 resulted in a maximum above-background dose of 0.6 mrem/yr and an ELCR of 9.9E-06. The model of Trench SU 252 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 252 dose calculations are presented in Appendix D and are summarized in Table 6-2 of *Final Survey Unit 252 Project Report* (Shaw, 2012e; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 252 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and import fill soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at Trench SU 252 resulted in a maximum above-background dose of 0.6 mrem/yr and an ELCR of 9.9E-06. The model of Trench SU 252 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 252 Project Report* (Shaw, 2012e; Appendix H) was issued in September 2012.

4.3.4 Backfill Activities

Excavated Soil Units 354 (30 cy), 357 (30 cy), 358 (110 cy), 360 (80 cy), 384 (80 cy), and 389 (20 cy) were used in part to backfill SU 252. Final data from ESUs 354, 357, 358, and 360 were provided by the on-site laboratory, per the SUPRA Revision 3 (TtEC, 2011a). Final data from ESUs 384 and 389 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data from the screening activities at these ESUs are presented in Tables 3-2 through 3-7 of *Final Survey Unit 252 Project Report* (Shaw, 2012e; Appendix H). The analytical data packages for all ESUs are presented in Appendix C of *Final Survey Unit 252 Project Report*.

A stormwater swale was constructed on top of the footprint of Trench SU 252. The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench; follow by a layer of ½-inch to 2-inch diameter drain rocks.

4.4 Trench Survey Unit 253

Trench SU 253 included trench segment 06-D24-00-6E and a volume of screened excavated soil used for backfill. The location of SU 253 is shown on Figure 5. Trench SU 253 is located along Manseau Street in WA 24, outside of the potentially radiologically impacted area associated with GMP. Trench SU 253 is bordered by Trench SU 250 to the west and Trench SU 252 to the east. Approximately 160 cy of soil were excavated from Trench SU 253. The length of Trench SU 253 is 74 feet (26 meters), and the estimated surface area of the excavated surfaces for Trench Unit 253 is 1,871 ft² (174 m²). Excavated depths varied between 4 to 8 feet bgs.

4.4.1 Removal Action Activities

Excavation of Trench SU 253 commenced on November 8, 2010, in trench segment 06-D24-00-6E, and removal of the pipe and soil was completed on the same day. A total of 16 truckloads (approximately 160 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 74 linear feet of pipe was removed from Trench SU 253. Pipe was found in trench between 3 and 7 feet bgs. Trench segment 06-D24-00-6E contained a 30-inch diameter RCP. Majority of the RCP sections were excavated out and placed on plastic sheeting pending further investigation. Portions of the pipe that were crushed or disintegrated upon removal were sent to the Basewide Radiological Contractor's RSY2 along with the excavated soil for processing. No manhole was removed from Trench SU 253.

Sufficient sediment for sample collection and analysis was found in three pipe sections of trench segment 06-D24-00-6E (Table 8). The sediment samples collected from two pipe sections removed from trench segment 06-D24-00-6E identified ¹³⁷Cs activity above the release limit at 0.1275 pCi/g and 0.2809 pCi/g. Due to the presence of ¹³⁷Cs activity above the release criterion in two pipe sections, sediment samples with identified ¹³⁷Cs activity were sent to the off-site laboratory for total Sr analysis. The off-site analytical results for the one of the two samples indicated the presence of Sr activity at 0.3350 pCi/g above the release criterion. The sediment sample analytical reports are provided in Appendix M. Both sections of pipe containing contaminated sediment were placed in a LLRW bin for disposal by the Navy's LLRW contractor.

Radiological surveys were performed for the staged pipe sections during the Parcel D-1 removal action activities. No elevated results were identified for any of the Trench SU 253 piping surveyed.

The original systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 253 Project Report*. Two out of 18 systematic samples had reported ^{137}Cs levels greater than the MDA; however, none of the results exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . Twelve of 18 systematic samples had reported ^{226}Ra levels greater than the MDA, with one sample (06-PD1T-253-003) exceeding the project release criterion of 1.485 pCi/g for ^{226}Ra .

Three of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . One of the three samples had a reported detection of total Sr above the MDL; however, the reported result was below the project release criterion of 0.331 pCi/g for ^{90}Sr . The remaining total Sr results were below the MDL and therefore, below the project release criterion for ^{90}Sr .

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the SU 253 excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. No elevated areas were identified. A summary of gamma scanning data is presented in Appendix B of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H).

Remediation activities were performed over a 95-square-foot area that encompassed the area represented by sample 06-PD1T-253-003, which exceeded the project release criterion for ^{226}Ra . Soil was removed to a depth of 0.5 feet below the trench surface, thus resulting in the removal of approximately 1.75 cy of material that was disposed as low-level radioactive waste. Post-remediation scans were performed to identify the highest locations for collection of post-remediation samples. Seven post-remediation samples (06-PD1T-253-019 and 06-PD1T-253-119 to 06-PD1T-253-124) were collected at and around the original location of sample 06-PD1T-253-003, and results were below project release criteria for all ROCs, as shown in Table 3-2 of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H). Post-remediation static gamma measurements were collected at the original sample location and at five locations along the edge of the additional excavation. All results were below project investigation levels.

A second set of systematic samples (samples 06-PD1T-253-101 through 06-PD1T-253-118) were collected following the remediation of 06-PD1T-253-003. On-site screening results from

these samples (Appendix A of the *Final Survey Unit 253 Project Report* [Shaw, 2012f]) were below release criteria, and therefore, the sample set was sent for final analysis at TestAmerica St. Louis. These off-site systematic sampling results for the project ROCs are summarized in Table 3-3 of the *Final Survey Unit 253 Project Report*, and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 253 Project Report*. Eight out of 18 systematic samples had reported ^{137}Cs levels greater than the MDL; and two of the samples (06-PD1T-253-105 and 06-PD1T-253-112) exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . Seventeen of 18 systematic samples had reported ^{226}Ra levels greater than the MDL; however, none of the samples exceeded the project release criterion of 1.485 pCi/g for ^{226}Ra .

Four of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . Two of the four samples had a reported total Sr above the MDL; however, the reported results were below the project release criterion of 0.331 pCi/g for ^{90}Sr . The remaining total Sr results were below the MDA and therefore, below the project release criterion for ^{90}Sr .

Remedial activities were performed over a 50-square-foot area that encompassed the area represented by sample 06-PD1T-253-105, which exceeded the project release criterion for ^{137}Cs . Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 1.85 cy of material that was disposed as low-level radioactive waste. Post-remediation scans were performed to identify the highest locations for collection of post-remediation samples. Five post-remediation samples (06-PD1T-253-125 to 06-PD1T-253-129) were collected at and around the original location of sample 06-PD1T-253-105, and results for all ROCs were below project release criteria as shown in Table 3-4 of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H). Post-remediation static gamma measurements were collected at the original sample location and at four locations along the edge of the additional excavation. All results were below project investigation levels.

Remedial activities were also performed over a 75-square-foot area that encompassed the area represented by sample 06-PD1T-253-112, which exceeded the project release criterion for ^{137}Cs . Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 2.78 cy of material that was disposed as low-level radioactive waste. Post-remediation scans were performed to identify the highest locations for collection of post-remediation samples. Six post-remediation samples (06-PD1T-253-130 to 06-PD1T-253-135) were collected at and around the original location of sample 06-PD1T-253-112, and results for all ROCs were below project release criteria as shown in Table 3-4 of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H). Post-remediation static gamma measurements were collected at the original sample location and

at four locations along the edge of the additional excavation. All results were below project investigation levels.

A third set of systematic samples (samples 06-PD1T-253-201 through 06-PD1T-253-218) were collected following the remediation of 06-PD1T-253-105 and 06-PD1T-253-112. On-site screening results from these samples (Appendix A) were below release criteria, and therefore, the sample set was sent for final analysis at TestAmerica St. Louis. These off-site systematic sampling results for the project ROCs are summarized in Table 3-5 of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 253 Project Report*. Three of 18 systematic samples had reported ^{137}Cs levels greater than the MDL, and one result (06-PD1T-253-201) exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . All 18 systematic samples had reported ^{226}Ra levels greater than the MDL; however, none of the samples exceeded the project release criterion of 1.485 pCi/g for ^{226}Ra .

Four of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . One of the four samples had a reported total Sr above the MDA; however, the reported result was below the project release criterion of 0.331 pCi/g for ^{90}Sr . The remaining total Sr results were below the MDA and therefore, below the project release criterion for ^{90}Sr .

Remedial activities were performed over a 50-square-foot area that encompassed the area represented by sample 06-PD1T-253-201, which exceeded the project release criterion for ^{137}Cs . Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 1.8 cy of material that was disposed as low-level radioactive waste. Post-remediation scans were performed to identify the highest locations for collection of post-remediation samples. Six post-remediation samples (06-PD1T-253-219 to 06-PD1T-253-224) were collected at and around the original location of sample 06-PD1T-253-201, and results for all ROCs were below project release criteria as shown in Table 3-6 of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H). Post-remediation static gamma measurements were collected at the original sample location and at four locations along the edge of the additional excavation. All results were below project investigation levels.

4.4.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 253 remained in place following the completion of the removal action.

4.4.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan*,

Version 6.0 (PNNL, 2010). Final systematic samples were collected from 18 locations on September 29, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-7 of the *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of *Final Survey Unit 253 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; however, this result did not exceed the project release criterion for ^{137}Cs (0.113 pCi/g). Seventeen of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no samples exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . Neither of the samples had a reported total Sr above the MDL and therefore, were below the project release criterion for ^{90}Sr .

For the FSS, Trench SU 253 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 253 were 0.050 pCi/g for ^{137}Cs , 0.198 pCi/g for ^{90}Sr , and 0.868 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.043 pCi/g for ^{137}Cs , 0.146 pCi/g for ^{90}Sr , and 0.336 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used in Trench SU 253 resulted in a maximum above-background dose of 2.1 mrem/yr and an ELCR of 4E-05. The model of Trench SU 253 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 2.5E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two dose calculations are presented in Appendix D and are summarized in Table 6-2 of *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 253 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.

- Analytical results from the radiologically-screened excavated soil were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used in Trench SU 253 resulted in a maximum above-background dose of 2.1 mrem/yr and an ELCR of 4E-05. The model of Trench SU 253 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 2.5E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H) was issued in October 2012.

4.4.4 Backfill Activities

ESU 357 (160 cy) was used to backfill Trench SU 253. The analytical data from the screening activities at ESU 357 is presented in Table 3-8 of *Final Survey Unit 253 Project Report* (Shaw, 2012f; Appendix H). Final data from ESU 357 were provided by the HPNS on-site radiological laboratory, per the SUPRA Revision 3 (TtEC, 2011a). The analytical data package prepared by the Basewide Radiological Contractor for ESU 357 is presented in Appendix C of *Final Survey Unit 253 Project Report*.

A stormwater swale was constructed on top of the footprint of Trench SU 253. The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench; follow by a layer of ½-inch to 2-inch diameter drain rocks.

4.5 Trench Survey Unit 254

SU 254 consists of Trench Unit 254 and a volume of excavated and imported fill material used for backfill. The location of SU 254 within Parcel D-1 is shown on Figure 5. SU 254 consists of seven trench segments (06-D24-35-2A, 06-D24-35-2B, 06-D24-35-2C, 06-D24-35-2D, 06-D24-35-2E, 06-D24-35-2F, and 06-D24-35-4G) located in WA 24. Portions of SU 254 are located beneath or adjacent to the footprint of the Former Buildings 313, 313A, and 322 Sites. The total surface area was approximately 4,411 ft² (410 m²) of actual excavated trench in varying depths between 5 and 5.5 feet bgs. Approximately 509 cubic yards (cy) of soil were excavated from SU 254.

4.5.1 Removal Action Activities

Excavation of SU 254 was initiated on February 22, 2011, in trench segment 06-D24-35-2F, and removal of the pipe and soil was completed on April 12, 2011. A total of 75 truckloads

(approximately 750 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 and RSY3 for processing.

Approximately 329 linear feet of pipe was removed from Trench SU 254 during excavation activities. Pipe was found in trench between 4 to 6.5 feet bgs. Trench segments 06-D24-35-2A and 06-D24-35-2F contained a 24-inch diameter VCP. Trench segments 06-D24-35-2B, 06-D24-35-2C, and 06-D24-35-4G contained a 6-inch diameter VCP. Trench segments 06-D24-35-2D and 06-D24-35-2E contained a 3-inch and 2-inch diameter metal pipes, respectively. Majority of the metal sections were excavated out and placed on plastic sheeting pending further investigation. Portions of the pipe, in particular, VCP, that were crushed or disintegrated upon removal were sent to the Basewide Radiological Contractor's RSY2 along with the excavated soil for processing.

Two manholes (MH700 and MH701) were associated with Trench SU 254 as shown on the Design Drawings (Shaw, 2010f and 2010g) (Table 9). MH700 was removed on February 22, 2011, as part trench segment 06-D24-35-2F excavation. MH701 could not be located. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 254. Consequently, there are no sediment sample analytical results associated with Trench SU 254. MH700 was surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

The original systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 254 Project Report*. None of the systematic samples had reported ^{137}Cs levels greater than the MDA; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Twelve of the 18 systematic samples reported ^{226}Ra levels greater than the MDA, and one of the results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g) (06-PD1T-254-006).

Two of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . One of the results (06-PD1T-254-006) was equal to the project release criterion for ^{90}Sr (0.331 pCi/g). Sample 06-PD1T-254-006 was then analyzed directly for ^{90}Sr , and the reported result (0.666 pCi/g) also exceeded the ^{90}Sr criterion.

Remedial activities were performed over an approximate 100-ft² area that encompassed the area represented by sample 06-PD1T-254-006. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 3.7 cy of material that were transferred to the Navy's LLRW contractor for disposition. Six post-remediation samples (06-PD1T-254-019 to 06-PD1T-260-024) were collected in the vicinity of the original location of sample 06-PD1T-254-006, and all results were below project release criteria as shown in

Table 2. Six post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report* [Shaw, 2012g; Appendix H]).

After remediation, a second set of systematic samples was taken (samples 06-PD1T-254-101 through 06-PD1T-254-118). The systematic sampling results for the project ROCs are summarized in Table 3-3 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 254 Project Report*. None of the systematic samples had reported ^{137}Cs levels greater than the MDA; therefore, none of the results exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . Fifteen of the 18 systematic samples had reported ^{226}Ra levels greater than the MDA; and two of the results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g) (06-PD1T-254-104 and 06-PD1T-254-107).

Remedial activities were performed over an approximate 100-ft² area that encompassed the immediate area represented by samples 06-PD1T-254-104 and 06-PD1T-254-107. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 3.7 cy of material that were transferred to the Navy's LLRW contractor for disposition. In addition, an additional 18 inches of soil were removed from the bottom and sides of SU 254, thus resulting in the removal of approximately 290 cy of soil, which were processed by the HPNS RSY. After remediation, a third set of systematic samples (06-PD1T-254-201 through 06-PD1T-254-218) was taken. The systematic sampling results for the project ROCs are summarized in Table 3-4 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 254 Project Report*. The screening data from the HPNS on-site radiological laboratory met the project release criteria, and the samples were forwarded to the off-site laboratory for final analysis. None of the systematic samples had reported ^{137}Cs levels greater than the MDL; therefore, none of the results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Sixteen of the 18 systematic samples had reported ^{226}Ra levels greater than the MDL; and one of the results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g) (06-PD1T-254-210).

Two of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . Both results were below the MDL and therefore, were below the project release criterion for ^{90}Sr (0.331 pCi/g).

Prior to remedial activities, six bounding samples (06-PD1T-254-219 to 06-PD1T-254-224) were collected in the vicinity of the original location of sample 06-PD1T-254-210, and all results were below project release criteria as shown in Table 3-5 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six bounding static gamma measurements were collected in the

vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report* [Appendix H]).

Remedial activities were performed over an approximate 100-ft² area that encompassed the area represented by sample 06-PD1T-254-210. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 3.7 cy of material that were transferred to the Navy's LLRW contractor for disposition. Eight post-remediation samples (06-PD1T-254-225 to 06-PD1T-254-232) were collected in the vicinity of the original location of sample 06-PD1T-254-210, and one result exceeded the project release criteria for ²²⁶Ra (06-PD1T-254-231), as shown in Table 3-6 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report* [Shaw, 2012g; Appendix H]).

Prior to remedial activities, six bounding samples (06-PD1T-254-233 to 06-PD1T-254-238) were collected in the vicinity of the original location of sample 06-PD1T-254-231, and one result exceeded the project release criteria for ²²⁶Ra (06-PD1T-254-237), as shown in Table 3-7 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report* [Shaw, 2012g; Appendix H]).

Remedial activities were performed over an approximate 100- ft² area that encompassed the area represented by samples 06-PD1T-254-231 and 06-PD1T-254-237. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 3.7 cy of material that were transferred to the Navy's LLRW contractor for disposition. Eight post-remediation samples (06-PD1T-254-239 to 06-PD1T-254-246) were collected in the vicinity of the original location of samples 06-PD1T-254-231 and 06-PD1T-254-237, and all results were below project release criteria as shown in Table 3-8 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Eight post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report* [Shaw, 2012g; Appendix H]).

After remediation, a fourth set of systematic samples (06-PD1T-254-301 through 06-PD1T-254-318) was collected. The systematic sampling results for the project ROCs are summarized in Table 3-9 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 254 Project Report*. None of the systematic samples had reported ¹³⁷Cs levels greater than the MDA; therefore, none of the results exceeded the project

release criterion for ^{137}Cs (0.113 pCi/g). Seventeen of the 18 systematic samples had reported ^{226}Ra levels greater than the MDA, and two of the results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g) (06-PD1T-254-305 and 06-PD1T-254-308).

Prior to remedial activities, six bounding samples (06-PD1T-254-319 to 06-PD1T-254-324) were collected in the vicinity of the original location of sample 06-PD1T-254-305, and all results were below project release criteria as shown in Table 3-10 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report* [Shaw, 2012g]).

Remedial activities were performed over an approximate 100- ft² area that encompassed the area represented by sample 06-PD1T-254-305. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 3.7 cy of material that were transferred to the Navy's LLRW contractor for disposition. Six post-remediation samples (06-PD1T-254-325 to 06-PD1T-254-330) were collected in the vicinity of the original location of sample 06-PD1T-254-305, and all results were below project release criteria as shown in Table 3-11 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Prior to remedial activities, six bounding samples (06-PD1T-254-331 to 06-PD1T-254-336) were collected in the vicinity of the original location of sample 06-PD1T-254-308, and two results exceeded the project release criteria for ^{226}Ra (06-PD1T-254-331 and 06-PD1T-254-335) as shown in Table 3-12 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 400-ft² area that encompassed the area represented by sample 06-PD1T-254-308. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 14.8 cy of material that were transferred to the Navy's LLRW contractor for disposition. Six post-remediation samples (06-PD1T-254-337 to 06-PD1T-254-342) were collected in the vicinity of the original location of sample 06-PD1T-254-308, and all results were below project release criteria as shown in Table 3-13 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Prior to remedial activities, four bounding samples (06-PD1T-254-343 to 06-PD1T-254-346) were collected in the vicinity of the original location of sample 06-PD1T-254-331, and one result exceeded the project release criteria for ^{226}Ra (06-PD1T-254-346) as shown in Table 3-14 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Four bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 50-square-foot area that encompassed the area represented by sample 06-PD1T-254-331. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 2.3 cy of material that were transferred to the Navy's LLRW contractor for disposition. Six post-remediation samples (06-PD1T-254-347 to 06-PD1T-254-352) were collected in the vicinity of the original location of sample 06-PD1T-254-331, and two results exceeded the project release criteria for ^{226}Ra (06-PD1T-254-347 and 06-PD1T-254-349) as shown in Table 3-15 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). Six post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 9-square-foot area that encompassed the area represented by sample 06-PD1T-254-335. Soil was removed to a depth of 3 foot below the trench surface, thus resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-254-353) was collected directly over the original location of sample 06-PD1T-254-335, and the result was below project release criteria as shown in Table 3-16 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). One post-remediation static gamma measurement was collected directly over the original sample location, and the result was below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 9-square-foot area that encompassed the area represented by sample 06-PD1T-254-308. Soil was removed to a depth of 3 foot below the trench surface, thus resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-254-354) was collected directly over the original location of sample 06-PD1T-254-308, and the result was below project release criteria as shown in Table 3-16 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). One post-remediation static gamma measurement was collected directly over the original sample location, and the result was below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 9-square-foot area that encompassed the area represented by sample 06-PD1T-254-331. Soil was removed to a depth of 3 foot below the trench surface, thus resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-254-355) was collected directly over the original location of sample 06-PD1T-254-331, and the result was below project release criteria as shown in Table 3-16 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). One post-remediation static gamma measurement was collected directly over the original sample location, and the result was below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 9-square-foot area that encompassed the area represented by sample 06-PD1T-254-305. Soil was removed to a depth of 3 foot below the trench surface, thus resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-254-356) was collected directly over the original location of sample 06-PD1T-254-305, and the result was below project release criteria as shown in Table 3-17 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). One post-remediation static gamma measurement was collected directly over the original sample location, and the result was below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 9-square-foot area that encompassed the area represented by sample 06-PD1T-254-346. Soil was removed to a depth of 3 foot below the trench surface, thus resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-254-357) was collected directly over the original location of sample 06-PD1T-254-346, and the result was below project release criteria as shown in Table 3-17 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). One post-remediation static gamma measurement was collected directly over the original sample location, and the result was below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 9-square-foot area that encompassed the area represented by sample 06-PD1T-254-347. Soil was removed to a depth of 3 foot below the trench surface, thus resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-254-358) was collected directly over the original location of sample 06-PD1T-254-347, and the result was below project release criteria as shown in Table 3-17 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H).

One post-remediation static gamma measurement was collected directly over the original sample location, and the result was below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

Remedial activities were performed over an approximate 9-square-foot area that encompassed the area represented by sample 06-PD1T-254-349. Soil was removed to a depth of 3 foot below the trench surface, thus resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-254-359) was collected directly over the original location of sample 06-PD1T-254-349, and the result was below project release criteria as shown in Table 3-17 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H). One post-remediation static gamma measurement was collected directly over the original sample location, and the result was below project investigation levels (Appendix B of the *Final Survey Unit 254 Project Report*).

In total, 147 soil samples (including bounding, post-remediation, and systematic samples) were collected and 331.6 cy of soil was remediated from Trench SU 254 during Parcel D-1 removal activities.

4.5.2 Piping Remaining in Place

No known SD or SS piping associated with SU254 remained in place following the completion of the removal action.

4.5.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010).

The final set of systematic samples was composed of samples 06-PD1T-254-301 to 06-PD1T-254-304, 06-PD1T-254-306, 06-PD1T-254-307, and 06-PD1T-254-309 to 06-PD1T-254-318 collected on February 16, 2012, and samples 06-PD1T-254-354 and 06-PD1T-254-356 collected on April 20, 2012, and June 19, 2012, respectively. Samples 06-PD1T-254-354 and 06-PD1T-254-356 are representative of samples 06-PD1T-254-308 and 06-PD1T-254-305, respectively, after remediation and re-sample of the exact area where those samples were located. The final systematic sampling results for the project ROCs are summarized in Table 3-18 of the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 254 Project Report*. None of the 18 systematic samples had reported ^{137}Cs levels greater than the MDL; therefore, none of the results exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . All 18 systematic samples had reported

^{226}Ra levels greater than the MDL; however, none of the results exceeded the project release criterion of 1.485 pCi/g for ^{226}Ra .

Three out of the final 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . All results were below the MDL and therefore, were below the project release criterion of 0.331 pCi/g for ^{90}Sr .

For the FSS, SU 254 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in SU 254 were 0.038 pCi/g for Cs-137, 0.084 pCi/g for Sr-90, and 0.587 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.042 pCi/g for Cs-137, 0.178 pCi/g for Sr-90, and 0.663 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at SU 254 resulted in a maximum above-background dose of 0.1 millirem per year (mrem/yr) and an ELCR of 2E-06. The model of the Trench SU 254 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. These results meet the project dose and risk criteria and as such, no additional dose modeling is required. The RESRAD (ANL, 2009) output files for the two SU 254 dose calculations are presented in Appendix D and are summarized in Table 6-2 of *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H).

No further action is required, and unrestricted release is recommended for SU 254 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at SU 254 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 2E-06. The model of the Trench SU 254 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. Dose and risk modeling demonstrated that the residual dose and risk

under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H) was issued in October 2012.

4.5.4 Backfill Activities

Excavated soil from ESU 345 (50 cy) was used in part to backfill SU 254. The analytical data from the screening activities at ESU 345 are presented in Table 3-19. Final data from ESU 345 were provided by the on-site laboratory, per the SUPRA Revision 3 (TtEC, 2011a). The analytical data package prepared by the on-site laboratory and TestAmerica St. Louis for ESU 345 is presented in Appendix C of *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H).

Approximately 459 cy of imported fill material from the Jericho import fill source were used to backfill SU 254. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

4.6 Trench Survey Unit 255

Trench SU 255 included trench segment 06-D24-00-6E and a volume of radiologically-screened excavated soil used for backfill. The location of SU 255 is shown on Figure 5. Trench SU 255 is located along Manseau Street in WA 24, adjacent to trench segments from Trench SU 252. Approximately 90 cy of soil were excavated from Trench SU 255. The estimated surface area of the excavated surfaces for Trench Unit 255 was 1,096 ft² (102 m²). Trench SU 255 was excavated to depths of 5 to 6 feet bgs.

4.6.1 Removal Action Activities

Excavation of Trench SU 255 commenced on November 8, 2010, in trench segment 06-D24-00-6E, and removal of the pipe and soil was completed on November 9, 2010. A total of 9 truckloads (approximately 90 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 57 linear feet of pipe was removed from Trench SU 255. Pipe was found in the trench between 4 and 5 feet bgs. Trench segment 06-D24-00-6E contained a 30-inch diameter RCP. The majority of the RCP sections were excavated out and placed on plastic sheeting pending further investigation. Portions of the pipe that were crushed or disintegrated upon removal were sent to the Basewide Radiological Contractor's RSY2 along with the excavated soil for processing. No manhole was removed from Trench SU 255.

Sufficient sediment for sample collection and analysis was found in one pipe section (Table 8). The sediment sample collected from trench segment 06-D24-00-6E identified ¹³⁷Cs activity

above the release criterion at 0.1902 pCi/g. Due to the presence of ^{137}Cs activity above the release criterion, the sediment sample with was sent to the off-site laboratory for total Sr analysis. The off-site analytical did not indicate the presence of radioactivity above the release criterion for total Sr. The sediment sample analytical reports are provided in Appendix M. Pipe sections containing contaminated sediment were placed in LLRW bins for disposal by the Navy's LLRW contractor.

Radiological surveys were performed for the staged pipe sections during the Parcel D-1 removal action activities. No elevated results were identified for any of the Trench SU 255 piping surveyed.

The original systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 255 Project Report* (Shaw, 2012h; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 255 Project Report*. Fourteen of the 18 systematic samples reported ^{137}Cs levels greater than the MDA with one sample (06-PD1T-255-005) exceeding the project release criterion of 0.113 pCi/g for ^{137}Cs . All 18 systematic samples reported ^{226}Ra levels greater than the MDA, with one sample (06-PD1T-255-006) exceeding the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the original 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . No samples reported above the MDL; therefore, none of the results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the Trench SU 255 excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. Three locations were selected to further investigate potentially anomalous measurements (discussed further in Appendix B of the *Final Survey Unit 255 Project Report* [Shaw, 2012h]). One additional biased sample (06-PD1T-255-019) was collected, and all screening results were below project release criteria as shown in Table 3-2 of the *Final Survey Unit 255 Project Report*. A summary of gamma scanning data is presented in Appendix B of the *Final Survey Unit 255 Project Report*.

Remedial activities were performed over an approximate 100-square-foot area that encompassed the area represented by samples 06-PD1T-255-005 and 06-PD1T-255-006. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 3.7 cy of material that was disposed as low-level radioactive waste. Five post-remediation samples (06-PD1T-255-020 through 06-PD1T-255-025) were collected at the boundary of the remediation area, and all results were below project release criteria as shown in Table 3-3 of the

Final Survey Unit 255 Project Report (Shaw, 2012h; Appendix H). Five post-remediation static gamma measurements were collected along the boundary of the additional excavation, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 255 Project Report*).

4.6.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 255 remained in place following the completion of the removal action.

4.6.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 19, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-4 of the *Final Survey Unit 255 Project Report* (Shaw, 2012h; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of *Final Survey Unit 255 Project Report*. One of the final 18 systematic samples reported ^{137}Cs levels greater than the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All of the final 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the final 18 systematic samples were analyzed off site for total Sr. One of the results for total Sr exceeded the MDL; however, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 255 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 255 were 0.047 pCi/g for ^{137}Cs , 0.198 pCi/g for ^{90}Sr , and 0.869 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.041 pCi/g for ^{137}Cs , 0.176 pCi/g for ^{90}Sr , and 0.476 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material resulted in a maximum above-background dose of 1.7 mrem/yr and an ELCR of 3E-05. The model of the trench SU resulted in a maximum above-background dose of 0.14 mrem/yr and an ELCR of 2E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD

output files for the two dose calculations are presented in Appendix D and are summarized in Table 6-2 of *Final Survey Unit 255 Project Report* (Shaw, 2012h; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 255 for the following reasons:

- All analytical results from systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and import fill soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA (TtEC, 2011b) have been met.
- The model of the backfill material resulted in a maximum above-background dose of 1.7 mrem/yr and an ELCR of 3E-05. The model of the trench SU resulted in a maximum above-background dose of 0.14 mrem/yr and an ELCR of 2E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 255 Project Report* (Shaw, 2012h; Appendix H) was issued in October 2012.

4.6.4 Backfill Activities

Soil from ESU 358 (approximately 90 cy) was used to backfill the bottom portion of Trench SU 255. The analytical data from the screening activities at ESU 358 are presented in Table 3-5 of *Final Survey Unit 255 Project Report* (Shaw, 2012h; Appendix H). Final data from ESU 358 were provided by the HPNS on-site radiological laboratory per the SUPRA Revision 3 (TtEC, 2011a). The analytical data package prepared by the Basewide Radiological Contractor and TestAmerica St. Louis for ESU 358 is presented in Appendix C of *Final Survey Unit 255 Project Report*.

A stormwater swale was constructed on top of the footprint of Trench SU 255. The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench; follow by a layer of ½-inch to 2-inch diameter drain rocks.

4.7 Trench Survey Unit 256

Trench SU 256 included one trench segment (06-D24-35-2H) located partially underneath Building 274 and a volume of imported fill material used for backfill. The location of Trench SU 256 is shown on Figure 5. The total excavated surface area was approximately 1,045 ft² (97 m²) with excavation depths varying between 0.5 and 4 feet bgs. Approximately 48 cy of soil were excavated from Trench SU 256.

4.7.1 Removal Action Activities

Excavation of Trench SU 256 commenced on October 18, 2010, in trench segment 06-D24-35-2H located outside Building 274 to the southwest. The trench was excavated to approximately 6 feet bgs, but the pipe line could not be located. Excavation of Trench SU 256 was suspended on October 20, 2010, pending radiological release of Building 274. Pipe removal at Trench SU 256 continued inside Building 274 on March 12, 2012, and was completed on March 22, 2012. A total of 9 truckloads (approximately 90 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 and RSY4 for processing.

Approximately 179 linear feet of pipe was removed from Trench SU 256 during excavation activities. Trench SU 256 pipe was found in the trench between 0 and 3 feet bgs inside Building 274. All trench segments contained 2-inch to 4-inch diameter metal pipes. All metal pipe sections were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipes were placed in LLRW bins for disposal by the Navy's LLRW contractor. No manholes were removed from Trench SU 256.

Adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 256. Consequently, there are no sediment sample analytical results associated with Trench SU 256.

4.7.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 256 remained in place following the completion of the removal action.

4.7.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on March 23, 2012, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 256 Project Report* (Shaw, 2012i; Appendix H), and analytical data packages

received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 256 Project Report*. Two of the systematic samples reported ^{137}Cs levels greater than the MDA; no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Fifteen of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . One sample result was reported above the MDL; however all of the results were below the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 256 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 256 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.041 pCi/g for ^{137}Cs , 0.195 pCi/g for ^{90}Sr , and 0.426 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 256 resulted in a maximum above-background dose of 0.06 mrem/yr and an ELCR of 1E-06. The model of Trench SU 256 resulted in a maximum above-background dose of 0.1 mrem/yr and a ELCR of 2E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 256 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 256 Project Report* (Shaw, 2012i; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 256 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.

- The model of the backfill material used at SU 256 resulted in a maximum above-background dose of 0.06 mrem/yr and an ELCR of 1E-06. The model of the Trench SU 256 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 2E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 256 Project Report* (Shaw, 2012i; Appendix H) was issued in October 2012.

4.7.4 Backfill Activities

Excavated soil from the trench segments associated with Trench SU 256 was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used to backfill Trench SU 256. Approximately 48 cy of imported fill material from the Jericho import fill source were used to backfill Trench SU 256 to the southwest of Building 274. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). Per discussion with the Navy, open trenches inside Building 274 were not backfilled.

4.8 Trench Survey Unit 257

Trench SU 257 included trench segment 06-D24-00-6K and a volume of radiologically-screened excavated soil used for backfill. The location of Trench SU 257 is shown on Figure 5. Trench SU 257 is located along Manseau Street in Parcel D-1, adjacent to segments from Trench SU 252. Approximately 300 cy of material were excavated from Trench SU 257. The estimated excavated surface area for Trench SU 257 is 2,062 ft² (192 m²) with excavated depths varying between approximately 5.5 and 7 feet bgs. Trench SU 257 is 102 feet (31 meters) in length.

4.8.1 Removal Action Activities

Excavation of Trench SU 257 commenced on November 10, 2010, in trench segment 06-D24-00-6K. Removal of the pipe and soil associated with this trench SU was completed in the same day. A total of 30 truckloads (approximately 300 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 102 linear feet (31 meters) of pipe was removed from Trench SU 257 during excavation activities. Trench SU 257 pipe was found between 4.5 and 6 feet bgs. Trench segment 06-D24-00-6K contained a 36-inch diameter RCP. Majority of the RCP sections were excavated out and placed on plastic sheeting pending further investigation. Portions of the pipe that were crushed or disintegrated upon removal were sent to the Basewide Radiological Contractor's

RSY2 along with the excavated soil for processing. No manhole was removed from Trench SU 257.

Sufficient sediment for sample collection and analysis was found in three pipe sections (Table 8). The analytical results for the sediment samples collected from one section of trench segment 06-D24-00-6K pipes did not indicate the presence of radioactivity above the release criteria for any ROC. The sediment sample collected from two pipe sections removed from trench segment 06-D24-00-6K identified ^{137}Cs activity above the release criterion at 0.1183 pCi/g and 0.2019 pCi/g. Due to the presence of ^{137}Cs activity above the release criterion in two pipe sections, all sediment samples with identified ^{137}Cs activity were sent to the off-site laboratory for total Sr analysis. The off-site analytical did not indicate the presence of radioactivity above the release criterion for total Sr. The sediment sample analytical reports are provided in Appendix M. Pipe sections containing contaminated sediment were placed in LLRW bins for disposal by the Navy's LLRW contractor (Table 8).

The original systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 257 Project Report* (Shaw, 2012j; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 257 Project Report*. Ten of the 18 systematic samples reported ^{137}Cs levels greater than the MDA; however, none of the results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Sixteen of 18 systematic samples reported ^{226}Ra levels greater than the MDA, with one sample (06-PD1T-257-016) exceeding the project release criterion for ^{226}Ra (1.485 pCi/g).

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the Trench SU 257 excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. No areas were identified that were above the investigation level of the instrument used. A summary of gamma scanning data is presented in Appendix B of the *Final Survey Unit 257 Project Report* (Shaw, 2012j; Appendix H).

Remedial activities were performed over approximately 40.55 square feet of area that encompassed the area represented by sample 06-PD1-SP-257-016. Soil was removed to a depth of 0.5 foot below the trench surface, resulting in the removal of approximately 1.5 cy of material that was disposed as low-level radioactive waste. Initially, one (06-PD1T-257-019) and then six additional post-remediation samples (06-PD1T-257-119 through 06-PD1T-257-124) were collected at the original location of sample 06-PD1T-257-016 and at locations bounding the original elevated sample. All post-remediation results were below project release criteria as shown below in Table 3-2 of the *Final Survey Unit 257 Project Report* (Shaw, 2012j;

Appendix H). Analytical data from the post-remediation sampling are presented in Appendix A of the *Final Survey Unit 257 Project Report*.

4.8.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 257 remained in place following the completion of the removal action.

4.8.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 19, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-3 of the *Final Survey Unit 257 Project Report* (Shaw, 2012j; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 257 Project Report*. None of the final systematic samples reported ^{137}Cs levels greater than the MDL; no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 final systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 final systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . The results for total Sr did not exceed the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 257 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 257 were 0.046 pCi/g for ^{137}Cs , 0.191 pCi/g for ^{90}Sr , and 0.840 pCi/g for ^{226}Ra . The trench SU average net residual radioactivity concentrations were 0.037 pCi/g for ^{137}Cs , 0.162 pCi/g for ^{90}Sr , and 0.342 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 257 resulted in a maximum above-background dose of 1.7 mrem/yr and an ELCR of 3E-05. The model of the trench SU resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two dose calculations are presented in

Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 257 Project Report* (Shaw, 2012j; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 257 for the following reasons:

- All analytical results from systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no anomalies were identified.
- Radiologically-screened excavated soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 257 resulted in a maximum above-background dose of 1.7 mrem/yr and an ELCR of 3E-05. The model of the trench SU resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 257 Project Report* (Shaw, 2012j; Appendix H) was issued in September 2012.

4.8.4 Backfill Activities

Soil from ESU 358 (50 cy) and ESU 359 (250 cy) were used to backfill Trench SU 257. Final data from ESUs 358 and 359 were provided by the on-site laboratory, per the SUPRA Revision 3 (TtEC, 2011a). The analytical data from the screening activities at each ESU are presented in Tables 3-4 and 3-5 of the *Final Survey Unit 257 Project Report* (Shaw, 2012j; Appendix H). The analytical data packages prepared by the Basewide Radiological Contractor and Test America St. Louis for these ESUs are presented in Appendix C of the *Final Survey Unit 257 Project Report*.

A stormwater swale was constructed on top of the footprint of Trench SU 257. The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench, followed by a layer of ½-inch to 2-inch diameter drain rocks.

4.9 Trench Survey Unit 259

Trench SU 259 included trench segments 06-D24-00-6K, 6M, -6N, -6O, -7A, -8A, -8B, and -8C and a volume of Navy-approved excavated and imported fill material used for backfill. The location of Trench SU 259 is shown on Figure 5. Trench SU 259 is located along Manseau Street and consists of one segment bordered on the north and west by Trench SU 252 and on the east by Trench SU 261. The total excavated surface area was approximately 4,425 ft² (411 m²) with excavation depths varying between 5 and 6 feet bgs. Approximately 490 cy of material was excavated from Trench SU 259.

4.9.1 Removal Action Activities

Excavation of Trench SU 259 commenced on November 10, 2010, in trench segment 06-D24-00-6K, and removal of the pipe and soil associated with this Trench SU was completed on November 29, 2010. A total of 49 truckloads (approximately 490 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 189 linear feet of pipe was removed from Trench SU 259 during excavation activities. Pipe was found in trench between 4 and 5 feet bgs. Trench segment 06-D24-00-6K, -6N, and -6O contained 36-inch diameter RCP. Trench segment 06-D24-00-6M contained 6-inch diameter steel pipe. Trench segments 06-D24-00-7A, -8A, and -8B contained 8-inch diameter VCP and trench segment 06-D24-00-8C contained 15-inch diameter RCP. Majority of the RCP and steel pipe were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the excavated pipes were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor. Most of the VCP disintegrated upon removal and was transferred to the Basewide Radiological Contractor's RSY2 along with the excavated soil for processing.

Four manholes were associated with Trench SU 259 (MH732, MH735, MH736, and MH737) (Table 9). MH732 was removed on November 11, 2010, and MH735, MH736, and MH737 were removed on November 12, 2010. Adequate volume of sediment for sample collection and analysis was not available from the manholes. All four manholes were radiologically surveyed. MH732 was disposed as LLRW and, MH735, MH736, and MH737 were released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

Sufficient sediment for sample collection and analysis was found in three pipe sections from trench segment 06-D24-00-6N (Table 8). The three sediment samples identified ¹³⁷Cs activity above the release criterion at 0.1585 pCi/g, 0.1455 pCi/g, and 0.2233 pCi/g. One sediment sample identified ²²⁶Ra above the release criterion at 1.4855 pCi/g. Due to the presence of ¹³⁷Cs activity above the release criterion, sediment samples were sent to the off-site laboratory for total

Sr analysis. The off-site analytical did not indicate the presence of radioactivity above the release criterion for total Sr. The sediment sample analytical reports are provided in Appendix M. Pipe sections containing contaminated sediment were placed in LLRW bins for disposal by the Navy's LLRW contractor.

The original systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 259 Project Report* (Shaw, 2012l; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A. One of the 18 systematic samples reported ^{137}Cs screening levels greater than the MDA; however, no results exceeded the project release criterion for ^{137}Cs (0.113pCi/g). Thirteen of the 18 systematic samples reported ^{226}Ra levels greater than the screening MDA; and one of the results (06-PD1T-259-013) exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the SU 259 excavation using a 2 inch by 2 inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. No scanning measurements were identified above the instrument investigation level. A summary of gamma scanning data is presented in Appendix B of the *Final Survey Unit 259 Project Report* (Shaw, 2012l; Appendix H).

Remedial activities were performed over an approximate 145.2-square foot area that encompassed the area represented by sample 06-PD1T-259-013. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 5.4 cy of material that was disposed as low-level radioactive waste. Eight post-remediation samples (06 PD1T 259-024 and 06-PD1T-259-025 and 06-PD1T-259-119 through 06-PD1T-259-124) were collected at the original location and in the vicinity of sample 06-PD1T-259-013, and all results were below project release criteria as shown below in Table 3-2 of the *Final Survey Unit 259 Project Report* (Shaw, 2012l; Appendix H).

4.9.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 259 remained in place following the completion of the removal action.

4.9.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 19, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-3 of the *Final Survey Unit 259 Project Report* (Shaw, 2012l; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 259 Project Report*. Two of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . The results for total Sr did not exceed the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 259 was defined as the sum of the trench SU and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 259 were 0.041 pCi/g for ^{137}Cs , 0.122 pCi/g for ^{90}Sr , and 0.625 pCi/g for ^{226}Ra . The trench SU average net residual radioactivity concentrations were 0.036 pCi/g for ^{137}Cs , 0.154 pCi/g for ^{90}Sr , and 0.418 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 259 resulted in a maximum above-background dose of 1.891 millirems per year (mrem/yr) and an ELCR of 3.239E-05. The model of Trench SU 259 resulted in a maximum above-background dose of 0.3232 mrem/yr and an ELCR of 4.330E-06. These results meet the project dose and risk criteria, and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 259 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 259 Project Report* (Shaw, 2012l; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 259 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and imported soil used for backfill met the project release criteria.

- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 259 resulted in a maximum above-background dose of 1.891 mrem/yr and an ELCR of 3.239E-05. The model of Trench SU 259 resulted in a maximum above-background dose of 0.3232 mrem/yr and an ELCR of 4.330E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 259 Project Report* (Shaw, 2012l; Appendix H) was issued in September 2012.

4.9.4 Backfill Activities

ESUs 360 (170 cy), 361 (250 cy), and 362 (20 cy) were used in part to backfill Trench SU 259. Final data from ESUs 360 and 361 were provided by the HPNS on-site radiological laboratory, per the SUPRA Revision 3 (TtEC, 2011a). Final data from ESU 362 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data from the screening activities at ESUs 360, 361, and 362 are presented in Tables 3-4 through 3-6, respectively. The analytical data packages prepared by TtEC and TestAmerica for these ESUs are presented in Appendix C of the *Final Survey Unit 259 Project Report* (Shaw, 2012l; Appendix H).

In addition to the radiologically-screened excavated soil, approximately 50 cy of imported fill material from Jericho import fill source were also used to backfill SU 259. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

A stormwater swale was constructed on top of the footprint of Trench SU 259. The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench; follow by a layer of ½-inch to 2-inch diameter drain rocks.

4.10 Trench Survey Unit 261

Trench SU 261 included trench segments 06-D24-00-6O, -6P, and -6S and 06-D24-32-6O, -6P, -6Q, -6R, and -6S and a volume of excavated and imported fill material used for backfill. The location of Trench SU 261 is shown on Figure 5. Trench SU 261 is located near the base of GMP within WA 24 in Parcel D-1. The total excavated surface area was approximately 6,403 ft² (595 m²) with excavation depths varying between 4.2 and 5.5 feet bgs. Approximately 810 cy of soil were excavated from Trench SU 261.

4.10.1 Removal Action Activities

Excavation of Trench SU 261 commenced on November 29, 2010, in trench segment 06-D24-00-6O, and removal of the pipe and soil was completed on December 2, 2010. A total of 81 truckloads (approximately 810 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 338 linear feet of pipe was removed from Trench SU 261. Pipe was found in the trench between 3.2 and 4.5 feet bgs. Trench segments 06-D24-00-6O and 06-D24-32-6O contained 36-inch diameter RCP. Trench segment 06-D24-00-6S, 06-D24-32-6R, and 06-D24-32-6S contained 15-inch diameter RCP. Trench segments 06-D24-00-6P and -6Q, and 06-D24-32-6P contained 6-inch to 8-inch diameter steel pipe. All removed metal pipes were placed in LLRW bins for disposal by the Navy's LLRW contractor. All RCP sections were radiologically surveyed, released, and disposed of as general construction debris. Pipes or portions of the pipe that were crushed and were less than 6-inch in any directions were sent to the Basewide Radiological Contractor's RSY2 along with the excavated soil.

An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 261. Consequently, there are no sediment sample analytical results associated with Trench SU 261.

Five manholes (MH707, MH708, MH738, MH739, and MH748) were removed from Trench SU 261 (Table 9). The manholes were removed from November 29 through December 1, 2010. Insufficient sediment was found for sample collection and analysis. All five manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

4.10.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 261 remained in place following the completion of the removal action.

4.10.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on March 8, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 261 Project Report* (Shaw, 2012n; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 261 Project Report*. None of the 18 systematic samples reported ^{137}Cs levels

greater than the MDL; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . One of the three samples (06-PD1T-261-003) had a detected total Sr result that exceeded the project ^{90}Sr release criterion of 0.331 pCi/g. As a result of the total Sr result, sample 06-PD1T-261-003 was analyzed for isotopic ^{90}Sr . The ^{90}Sr result was -0.424 pCi/g, which is below the release criterion.

For the FSS, Trench SU 261 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 261 were 0.040 pCi/g for ^{137}Cs , 0.092 pCi/g for ^{90}Sr , and 0.420 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.040 pCi/g for ^{137}Cs , 0.232 pCi/g for ^{90}Sr , and 0.338 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 261 resulted in a maximum above-background dose of 0.09 mrem/yr and an ELCR of $1\text{E} 06$. The model of Trench SU 261 resulted in a maximum above-background dose of 0.6 mrem/yr and an ELCR of $8\text{E}-06$. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 261 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 261 Project Report* (Shaw, 2012n; Appendix H).

No further action is required, and unrestricted release is recommended for SU 261 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and imported soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.

- The model of the backfill material used at SU 261 resulted in a maximum above-background dose of 0.09 mrem/yr and an ELCR of 1E-06. The model of the Trench SU 261 resulted in a maximum above-background dose of 0.6 mrem/yr and an ELCR of 8E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 261 Project Report* (Shaw, 2012n; Appendix H) was issued in September 2012.

4.10.4 Backfill Activities

ESU 362 (20 cy) was used in part to backfill Trench SU 261. Final data from ESU 362 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data from the screening activities at ESU 362 are presented in Table 3-2 of the *Final Survey Unit 261 Project Report* (Shaw, 2012n; Appendix H). The analytical data package prepared by TestAmerica St. Louis for this ESU is presented in Appendix C of the *Final Survey Unit 261 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 790 cy of imported fill material from the Jericho import fill source was also used to backfill SU 261. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

A stormwater swale was constructed on the southern end of Trench SU 261 footprint along Manseau Street. The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench; followed by a layer of ½-inch to 2-inch diameter drain rocks.

4.11 Trench Survey Unit 264

Trench SU 264 included trench segments 06-D24-00-5A, -5B, -5C, -5D, -5E, and -5F and volumes of screened excavated soil and import fill material used for backfill. The location of Trench SU 264 is shown on Figure 5. Trench SU 264 is located in the northeastern corner of WA 24 in Parcel D-1. The footprint of Trench SU 264 was nonlinear in an affected area of approximately 260 feet by 120 feet (80 meters by 37 meters). The total excavated surface area was approximately 9,454 ft² (878 m²) with excavation depths varying between 3 and 5 feet bgs. Approximately 1,280 cy of soil were excavated from Trench SU 264.

4.11.1 Removal Action Activities

Excavation of Trench SU 264 commenced on October 25, 2010, in trench segment 06-D24-00-5D, and removal of the pipe and soil was completed on January 12, 2011. A total of 128 truckloads (approximately 1,280 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 568 linear feet of pipe was removed from Trench SU 264 during excavation activities. Pipe was found in the trench between 2 to 4 feet bgs. Trench segments 06-D24-00-5A and -5F contained 18-inch diameter VCP and trench segments 06-D24-00-5B, -5C, -5D, and -5E contained 3-inch to 10-inch metal pipe. All removed metal pipes were placed in LLRW bins for disposal by the Navy's LLRW contractor. All VCPs were crushed during excavation and were sent to the Basewide Radiological Contractor's RSY2 along with excavated soil.

An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 264. Consequently, there are no sediment sample analytical results associated with Trench SU 264.

Trench segment 06-D24-00-5A was terminated at the Parcel D-1/Parcel C boundary. Trench segments 06-D24-00-5E and -5F were terminated at the outfalls along Berth No. 14. Three manholes (MH706, MH710, and MH714) were removed from Trench SU 264. MH714, MH710, and MH706 were removed from October 27, 2010, November 16, 2010, and November 24, 2010, respectively. Insufficient sediment was found for sample collection and analysis. All three manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

4.11.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 264 remained in place following the completion of the removal action.

4.11.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on March 9, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results are summarized as follows for the project ROCs in Table 3-1 of the *Final Survey Unit 264 Project Report* (Shaw, 2012q; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 264 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g). Two of 18 systematic samples were sent off site for total Sr analysis; one sample was reported above the MDL but below the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 264 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 264 were 0.040 pCi/g for ^{137}Cs , 0.139 pCi/g for ^{90}Sr , and 0.634 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.041 pCi/g for ^{137}Cs , 0.207 pCi/g for ^{90}Sr , and 0.443 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. The model of Trench SU 264 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 264 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 264 Project Report* (Shaw, 2012q; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 264 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and imported fill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. The model of Trench SU 264 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E 04.

The *Final Survey Unit 264 Project Report* (Shaw, 2012q; Appendix H) was issued in September 2012.

4.11.4 Backfill Activities

ESUs 350, 354, 362, and 384 were used to backfill Trench SU 264 with approximate volumes of 120 cy, 70 cy, 210 cy, and 80 cy, respectively, used from each ESU. Final data from ESUs 350 and 354 were provided by the HPNS on-site radiological laboratory, per the SUPRA Revision 3 (TtEC, 2011a). Final data from ESUs 362 and 384 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data from the screening activities at ESUs 350, 354, 362, and 384 are presented as follows in Tables 3-2 through 3-5 of the *Final Survey Unit 264 Project Report* (Shaw, 2012q; Appendix H), respectively. The analytical data packages prepared by the Basewide Radiological Contractor and/or TestAmerica St. Louis for ESUs 350, 354, 362, and 384 are presented in Appendix C of the *Final Survey Unit 264 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 800 cy of imported fill material from the Jericho import fill source was also used to backfill Trench SU 264. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

4.12 Trench Survey Unit 265

Trench SU 265 included trench segments 06-D24-00-2F, 06-D24-00-2J, 06-D24-00-2K, 06-D24-00-2L, 06-D24-00-2M, and 06-D24-35-2F and a volume of excavated and imported fill material used for backfill. The location of Trench SU 265 is shown on Figure 5. Trench SU 265 is located in WA 24 between Berth 14 and “E” Street. The total surface area was approximately 5,826 ft² (541 m²) of actual excavated trench in varying depths between 4 and 8.5 feet bgs. Approximately 894 cubic yards (cy) of soil were excavated from Trench SU 265.

4.12.1 Removal Action Activities

Excavation of Trench SU 265 commenced on March 18, 2011, in trench segment 06-D24-35-2F, and removal of the pipe and soil was completed on April 12, 2011. A total of 63 truckloads of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor’s RSY2 for processing.

Approximately 233 linear feet of pipe was removed from Trench SU 265 during excavation activities. Pipe was found in the trench between 3 to 7.5 feet bgs. Trench segments 06-D24-35-2F, 06-D24-00-2F, 06-D24-00-2K, and 06-D24-00-2M contained 24-inch diameter VCP. Trench segments 06-D24-00-2J and -2L contained 8-inch and 12-inch VCP, respectively. All VCPs were disintegrated upon removal and transferred to the Basewide Radiological Contractor’s RSY2 or RSY3 along with excavated soil.

Trench segment 06-D24-00-2M was terminated at the outfall along Berth No. 14. Four manholes (MH704, MH705, MH712 and MH713) were removed from Trench SU 265. MH704 and MH705 were removed on March 21, 2011. MH712 and MH713 were removed on March 23, 2011, and March 22, 2011, respectively. Insufficient sediment was found for sample

collection and analysis. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 265. Consequently, there are no sediment sample analytical results associated with Trench SU 265. All four manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

The original systematic samples were collected from 18 locations, per the requirements of the Section 17.4 of the SAP (Appendix A of the D-1 Radiological Work Plan [Shaw, 2010b]). The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 265 Project Report*. One of the systematic samples reported ^{137}Cs levels greater than the MDA; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Fifteen of the 18 systematic samples reported ^{226}Ra levels greater than the MDA; and one of the results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g) (06-PD1T-265-017).

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the Trench SU 265 excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. Two points above the scan investigation level was identified; therefore, a follow-up survey was performed, and although static measurements did not exceed investigation levels, biased samples were taken at the elevated locations (06-PD1T-265-020 and 06-PD1T-265-021) as a conservative measure. None of the results exceeded the project release criteria as shown in Table 3-2 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). A summary of gamma scanning and static data is presented in Appendix B of the *Final Survey Unit 265 Project Report*.

Prior to remedial activities, four bounding samples (06-PD1T-265-022 to 06-PD1T-265-025) were collected in the vicinity of the original location of sample, 06-PD1T-265-017, and one result (06-PD1T-265-024) exceeded the project release criteria as shown in Table 3-3 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Four bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below the project investigation levels.

Prior to remedial activities, two bounding samples (06-PD1T-265-026 to 06-PD1T-265-027) were collected in the vicinity of the original location of samples 06-PD1T-265-017 and 06-PD1T-265-024, and all results were below project release criteria as shown in Table 3-4 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Two bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below the project investigation levels.

Prior to remedial activities, five additional bounding samples (06-PD1T-265-028 to 06-PD1T-265-032) were collected in the vicinity of the original location of sample 06-PD1T-265-024, and two results (06-PD1T-265-030 and 06-PD1T-265-032) exceeded the project release criteria as shown in Table 3-5 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Five bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below the project investigation levels.

Remedial activities were performed over an approximate 25-square-foot area that encompassed the area represented by samples 06-PD1T-265-017 and 06-PD1T-265-024. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. Seven post-remediation samples (06-PD1T-265-033 to 06-PD1T-265-039) were collected in the vicinity of the original location of samples 06-PD1T-265-017 and 06-PD1T-265-024, and two results (06-PD1T-265-033 and 06-PD1T-265-038) exceeded the project release criteria as shown in Table 3-6 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Seven post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 265 Project Report*).

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the Trench SU 265 remediation excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. One area above the scan investigation level was identified; therefore, a follow-up survey was performed, and four biased samples were taken at the elevated locations (06-PD1T-265-040 to 06-PD1T-265-043). One of the results exceeded the project release criteria for ^{226}Ra as shown in Table 3-7 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). A summary of gamma scanning and static data is presented in Appendix B of the *Final Survey Unit 265 Project Report*.

Remedial activities were performed over an approximate 25-square-foot area that encompassed the area represented by sample 06-PD1T-265-043. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. Two post-remediation samples (06-PD1T-265-044 and 06-PD1T-265-045) were collected in the vicinity of the original location of sample 06-PD1T-265-043, and one result (06-PD1T-265-045) exceeded the project release criteria as shown in Table 3-8 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Two post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels.

Remedial activities were performed over an approximate 25-square-foot area that encompassed the area represented by sample 06-PD1T-265-043. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. Five post-remediation samples (06-PD1T-265-046 to 06-PD1T-265-050) were collected in the vicinity of the original location of sample 06-PD1T-265-043, and no results exceeded the project release criteria as shown in Table 3-9 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Five post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels.

Remedial activities were performed over an approximate 25-square-foot area that encompassed the area represented by sample 06-PD1T-265-045. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 1 cy of material that was transferred to the Navy's LLRW contractor for disposition. Three post-remediation samples (06-PD1T-265-051 to 06-PD1T-265-053) were collected in the vicinity of the original location of sample 06-PD1T-265-045, and no results exceeded the project release criteria as shown in Table 3-10 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Three post-remediation static gamma measurements were collected in the vicinity of the original sample location, and all results were below project investigation levels.

To address elevated results from 06-PD1T-265-030, -032, -033, and -038, additional material was excavated from the sides and bottom at the west end of Trench SU 265, resulting in the removal of approximately 90 cy of material. A second set of systematic samples (06-PD1T-265-101 through 06-PD1T-265-118) was taken after this excavation. The results for the project ROCs are summarized in Table 3-11 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 265 Project Report*. One of the systematic samples had reported ^{137}Cs levels greater than the MDA; however, none of the results exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . Fifteen of the 18 systematic samples had reported ^{226}Ra levels greater than the MDA, and two of the results exceeded the project release criterion of 1.485 pCi/g for ^{226}Ra (06-PD1T-265-115 and 06-PD1T-265-117).

Prior to remedial activities, eight bounding samples (06-PD1T-265-119 to 06-PD1T-265-126) were collected in the vicinity of the original location of samples 06-PD1T-265-115 and 06-PD1T-265-117, and none of the results exceeded the project release criteria as shown in Table 3-12 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Eight bounding static gamma measurements were collected in the vicinity of the original sample location, and all results were below the project investigation levels.

Remedial activities were performed over an approximate 100-square-foot area that encompassed the area represented by samples 06-PD1T-265-115 and 06-PD1T-265-117. Soil was removed to a depth of 3 feet below the trench surface, resulting in the removal of approximately 11 cy of material that were transferred to the Navy's LLRW contractor for disposition. Eight post-remediation samples (06-PD1T-265-127 to 06-PD1T-265-134) were collected in the vicinity of the original location of samples 06-PD1T-265-115 and 06-PD1T-265-117, and no results exceeded the project release criteria as shown in Table 3-13 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Eight post-remediation static gamma measurements were collected in the vicinity of the original sample locations, and all results were below project investigation levels.

After remediation, a third set of systematic samples (06-PD1T-265-201 through 06-PD1T-265-218) was taken. The systematic sampling results for the project ROCs are summarized in Table 3-14 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A of the *Final Survey Unit 265 Project Report*. None of the systematic samples had reported ^{137}Cs levels greater than the MDA; therefore, none of the results exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . Fourteen of the 18 systematic samples had reported ^{226}Ra levels greater than the MDA, and one of the results exceeded the project release criterion of 1.485 pCi/g for ^{226}Ra (06-PD1T-265-215).

Remedial activities were performed over an approximate 100-square-foot area that encompassed the area represented by samples 06-PD1T-265-215. Soil was removed to a depth of 3 foot below the trench surface, resulting in the removal of approximately 11 cy of material that were transferred to the Navy's LLRW contractor for disposition. Five post-remediation samples (06-PD1T-265-219 to 06-PD1T-265-223) were collected in the vicinity of the original location of sample 06-PD1T-265-215, and no results exceeded the project release criteria as shown in Table 3-15 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Five post-remediation static gamma measurements were collected in the vicinity of the original sample locations, and all results were below project investigation levels.

After remediation of 06-PD1T-265-215, a fourth set of systematic samples (06-PD1T-265-301 through 06-PD1T-265-318) was taken. The systematic sampling results for the project ROCs are summarized in Table 3-16 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H), and analytical data packages received from the on-site laboratory are presented in Appendix A. None of the systematic samples had reported ^{137}Cs levels greater than the MDA; therefore, none of the results exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . Twelve of the 18 systematic samples had reported ^{226}Ra levels greater than the MDL, and one of the results exceeded the project release criterion of 1.485 pCi/g for ^{226}Ra (06-PD1T-265-317).

Remedial activities were performed over an approximate 100-ft² area that encompassed the area represented by sample 06-PD1T-265-317. Soil was removed to a depth of 3 foot below the trench surface, resulting in the removal of approximately 11 cy of material that were transferred to the Navy's LLRW contractor for disposition. Six post-remediation samples (06-PD1T-265-325 to 06-PD1T-265-330) were collected in the vicinity of the original location of sample 06-PD1T-265-317, and one result exceeded the project release criteria as shown in Table 3-18 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Six post-remediation static gamma measurements were collected in the vicinity of the original sample locations, and all results were below project investigation levels.

Remedial activities were performed over an approximate 100- ft² area that encompassed the area represented by samples 06-PD1T-265-330 and 06-PD1T-265-317. Soil was removed to a depth of 3-foot below the trench surface, resulting in the removal of approximately 11 cy of material that were transferred to the Navy's LLRW contractor for disposition. One post-remediation sample (06-PD1T-265-331) was collected directly over the original location of samples 06-PD1T-265-330 and 06-PD1T-265-317, and none of the results exceeded the project release criteria as shown in Table 3-19 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). One post-remediation static gamma measurements were collected in the vicinity of the original sample locations, and all results were below project investigation levels (Appendix B).

In total, 141 soil samples (including bounding, post-remediation, and systematic samples) were collected and 138 cy of soil was remediated from Trench SU 265 during Parcel D-1 removal activities.

4.12.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 265 remained in place following the completion of the removal action.

4.12.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010).

The final set of final systematic samples consisted of samples 06-PD1T-265-301 through 06-PD1T-265-316 and 06-PD1T-265-318, collected on February 23, 2012, and sample 06-PD1T-265-331 as a post-remediation replacement sample for the original sample (06-PD1T-265-317) collected at that location, collected on April 20, 2012. The systematic sampling results for the project ROCs are summarized in Table 3-20 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H), and analytical data packages received from the

on-site laboratory are presented in Appendix A of the *Final Survey Unit 265 Project Report*. None of the systematic samples had reported ^{137}Cs levels greater than the MDL; therefore, none of the results exceeded the project release criterion of 0.113 pCi/g for ^{137}Cs . All of the 18 systematic samples had reported ^{226}Ra levels greater than the MDL; however, none of the results exceeded the project release criterion of 1.485 pCi/g for ^{226}Ra . Three out of the final 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . All results were below the MDL and therefore were below the project release criterion of 0.331 pCi/g for ^{90}Sr .

For the FSS, Trench SU 265 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 265 were 0.044 pCi/g for ^{137}Cs , 0.169 pCi/g for ^{90}Sr , and 0.650 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.042 pCi/g for ^{137}Cs , 0.202 pCi/g for ^{90}Sr , and 0.514 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at SU 265 resulted in a maximum above-background dose of 0.3 millirem per year (mrem/yr) and an ELCR of 4E-06. The model of the Trench SU 265 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-05. These results meet the project dose and risk criteria and as such, no additional dose modeling is required. The RESRAD (ANL, 2009) output files for the two SU 265 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 265 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at SU 265 resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. The model of the

Trench SU 265 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-05. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H) was issued in October 2012.

4.12.4 Backfill Activities

ESUs 357, 358, 359, 394, and 589 were used to backfill Trench SU 265 with approximate volumes of 33 cy, 33 cy, 33cy, 120 cy, and 130 cy, respectively, used from each ESU. The analytical data from the screening activities at ESUs 357, 358, 359, 394, and 589 are presented in Tables 3-22 to 3-25 of the *Final Survey Unit 265 Project Report* (Shaw, 2012r; Appendix H). Final data for ESUs 357, 358, and 359 were provided by the on-site laboratory, per the SUPRA Revision 3 (TtEC, 2011a). Final data for ESUs 394 and 589 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data packages prepared for these ESUs are presented in Appendix C of the *Final Survey Unit 265 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 545 cy of imported fill material from the Jericho import fill source was also used to backfill Trench SU 265. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

4.13 Trench Survey Unit 272

Trench SU 272 included trench segments 06-D24-00-3A and 06-D24-35-3A and a volume of imported fill material used for backfill. The location of Trench SU 272 is shown on Figure 5. Trench SU 272 is located along the northern boundary of WA 24 in Parcel D-1. The total excavated surface area was approximately 1,066 ft² (99 m²) with excavation depths varying between 4 to 5 feet bgs. The footprint of Trench SU 272 was 72 feet in length (22 meters). Approximately 110 cy of material were excavated from Trench SU 272.

4.13.1 Removal Action Activities

Excavation of Trench SU 272 commenced on October 11, 2010, in trench segment 06-24-00-3A, and removal of the pipe and soil completed on October 12, 2010. A total of 11 truckloads (approximately 110 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 72 linear feet of pipe was removed from Trench SU 272. Pipe was found in the trench between 3 to 4 feet bgs. Trench segments 06-D24-00-3A and 06-D24-35-3A contained 10-inch diameter VCP. All VCPs were disintegrated during excavation and were sent to the Basewide Radiological Contractor's RSY2 along with excavated soil.

Adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 272. Consequently, there are no sediment sample analytical results associated with Trench SU 272.

Trench segment 06-D24-00-3A was terminated at the Parcel D-1/Parcel C boundary. The pipe was plugged with nonshrink grout at the termination point. One manhole was found in association with Trench SU 272 (MH731) that was not included in the D-1 Sewer Design Plan (Shaw, 2010d). It was removed on October 12, 2010. Samples were not collected due to insufficient sediment volume. The manhole was surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

4.13.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 272 remained in place following the completion of the removal action.

4.13.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on December 3, 2010, and submitted to the HPNS on-site radiological laboratory for analysis. Upon review of the initial systematic sampling locations, it was determined that portions of the trench did not have adequate sampling coverage. On January 6, 2011, four additional samples were randomly collected from areas without sample coverage to complete the systematic data set.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 272 Project Report* (Shaw, 2012y; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 272 Project Report*. None of the 22 systematic samples reported ^{137}Cs levels greater than the MDL; therefore, no results exceeded the project release criterion ^{137}Cs (0.113 pCi/g). Twenty-one of the 22 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 22 systematic samples were analyzed for total Sr as surrogate for ^{90}Sr . One (06-PD1T-272-020) of the three samples had a detected total Sr result that exceeded the project ^{90}Sr release criterion of 0.331 pCi/g. Sample 06-PD1T-272-020 was then analyzed for isotopic ^{90}Sr . The ^{90}Sr result was 0.316 pCi/g, which is below the release criterion.

For the FSS, Trench SU 272 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were

applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 272 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench SU average net residual radioactivity concentrations were 0.038 pCi/g for ^{137}Cs , 0.250 pCi/g for ^{90}Sr , and 0.368 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 272 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 272 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 2E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 272 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 272 Project Report* (Shaw, 2012y; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 272 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Import backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 272 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 272 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 2E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 272 Project Report* (Shaw, 2012y; Appendix H) was issued in September 2012.

4.13.4 Backfill Activities

Excavated soil from the trench segments associated with Trench SU 272 was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used to backfill Trench SU 272. Approximately 110 cy of imported fill material from the Jericho import

fill source was used to backfill Trench SU 272. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

4.14 Trench Survey Unit 273

Trench SU 273 included trench segments 06-D24-35-1A and 06-D24-00-1A and a volume of imported fill material used for backfill. The location of Trench SU 273 is shown on Figure 5. Trench SU 273 is located along the northern boundary of WA 24 in Parcel D-1. The footprint of Trench Unit 273 was 73 feet in length (22 meters). The total excavated surface area was approximately 1,174 ft² (109 m²) with an excavation depth of approximately 5.6 feet bgs. Approximately 110 cy of material were excavated from Trench SU 273.

4.14.1 Removal Action Activities

Excavation of Trench SU 273 commenced on October 8, 2010, in trench segment 06-24-00-1A, and removal of the pipe and soil was completed on October 12, 2010. A total of 11 truckloads (approximately 110 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 73 linear feet of pipe was removed from Trench SU 273. Pipe was found in trench between 4 and 4.6 feet bgs. Trench segments 06-D24-00-1A and 06-D24-35-1A contained 10-inch diameter VCP. All VCPs were disintegrated during excavation and were sent to the Basewide Radiological Contractor's RSY2 along with excavated soil.

An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 273. Consequently, there are no sediment sample analytical results associated with Trench SU 273.

Trench segment 06-D24-00-1A was terminated at the Parcel D-1/Parcel C boundary. The pipe was plugged with nonshrink grout at the termination point. One manhole was found in association with Trench SU 273 (MH728) that was not included in the D-1 Sewer Design Plan (Shaw, 2010d). MH728 was removed on October 11, 2010, and disposed of as LLRW by Navy's LLRW contractor. Samples were not collected due to insufficient sediment volume. The manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

4.14.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 273 remained in place following the completion of the removal action.

4.14.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 22 locations on December 2, 2010, and submitted to the HPNS on-site radiological laboratory for analysis. Upon review of the initial systematic sampling locations, it was determined that portions of the trench did not have adequate sampling coverage. On January 7, 2011, four additional samples were randomly collected from areas without sample coverage to complete the systematic data set.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 273 Project Report* (Shaw, 2012z; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 273 Project Report*. Two of the 22 systematic samples reported ^{137}Cs levels greater than the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Twenty of the 22 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 22 systematic samples were sent to the off-site laboratory for total Sr analysis as a surrogate for ^{90}Sr ; all total Sr results were reported below the MDL and were therefore below the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 273 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 273 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.038 pCi/g for ^{137}Cs , 0.211 pCi/g for ^{90}Sr , and 0.357 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill used for Trench SU 273 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 273 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 2E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 273 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 273 Project Report* (Shaw, 2012z; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 273 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Import backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill used for Trench SU 273 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 273 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 2E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 273 Project Report* (Shaw, 2012z; Appendix H) was issued in September 2012.

4.14.4 Backfill Activities

Excavated soil from the Trench SU 273 trench segments was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used as backfill. Approximately 110 cy of imported fill material from the Jericho import fill source was used as backfill. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

4.15 Trench Survey Unit 274

Trench SU 274 included trench segments 06-D24-35-2F, -2G, -2I -4A, -4D, -4E, and -4F; 06-D24-00-4A, -4B, and -4C and a volume of excavated and imported fill material used for backfill. The location of Trench SU 274 is shown on Figure 5 Trench SU 274 is located along the eastern boundary of WA 24 in Parcel D-1. The trench segments are adjacent to Buildings 274, 368, and 369. The total excavated surface area was approximately 9,503 ft² (883 m² with excavation depths varying between 3 and 9 feet bgs. Approximately 1,130 cy of soil were excavated from Trench SU 274.

4.15.1 Removal Action Activities

Excavation of Trench SU 274 commenced on October 12, 2010, in trench segment 06-D24-35-4F, and removal of the pipe and soil was completed on October 18, 2011. A total of

113 truckloads (approximately 1130 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 615 linear feet of pipe was removed from Trench SU 274. Pipe was found in the trench between 2 and 8 feet bgs. The SD pipe in trench segments 06-D24-35-2F and 06-D24-35-2G contained 24-inch and 6-inch diameter VCP, respectively. The SD pipe in trench segment 06-D24-35-2I contained 4-inch diameter CIP. The SS pipe in trench segments 06-D24-00-4A, -4B, -4C, 06-D24-35-4A, -4D, -4E, and -4F contained 4-inch to 6-inch VCP. All removed metal pipes were placed in LLRW bins for disposal by the Navy's LLRW contractor. The majority of VCPs disintegrated upon removal and was transferred to the Basewide Radiological Contractor's RSY2 for processing along with excavated soil.

An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 274. Consequently, there are no sediment sample analytical results associated with Trench SU 274.

During the excavation of trench segment 06-D24-35-4E, an additional 29 feet of SS was found that was not previously identified in the D-1 Sewer Design Plan (Shaw, 2010d). During excavation of trench segment 06-D24-00-4A, a previously unidentified manhole was found and designated as MH733. Trench segment 06-D24-35-2H was not found within the footprint of Trench SU 274. Further discussion on this trench segment is included in Section 4.7 of the *Final Survey Unit 274 Project Report* (Shaw, 2012aa; Appendix H).

Trench segment 06-D24-35-4F was terminated at the Parcel D-1/Parcel G boundary. Three manholes were associated with Trench SU 274 (MH702, MH703, and MH733). MH703, MH733, and MH702 were removed on October 13, 15, and 18, 2010, respectively. Samples were not collected due to insufficient sediment volume. All three manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor.

4.15.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 274 remained in place following the completion of the removal action.

4.15.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 36 locations. The first set of 18 systematic samples was collected on December 9, 2010, and the second set was collected on January 6 to 7, 2011. Both sets were submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 274 Project Report* (Shaw, 2012aa; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 274 Project Report*. None of the 36 systematic samples reported ^{137}Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Twenty-nine of the 36 systematic samples reported ^{226}Ra levels greater than the MDL; however, none of the results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Four of the 36 systematic samples were sent to the off-site laboratory for total Sr analysis. One result for total Sr was reported above the MDL; however, none of the results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 274 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 274 were 0.041 pCi/g for ^{137}Cs , 0.111 pCi/g for ^{90}Sr , and 0.671 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.039 pCi/g for ^{137}Cs , 0.228 pCi/g for ^{90}Sr , and 0.382 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. The model of Trench SU 274 resulted in a maximum above-background dose of 0.9 mrem/yr and an ELCR of 1E-05. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 274 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 274 Project Report* (Shaw, 2012aa; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 274 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and imported backfill material met the project release criteria.

- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. The model of Trench SU 274 resulted in a maximum above-background dose of 0.9 mrem/yr and an ELCR of 1E-05. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 274 Project Report* (Shaw, 2012aa; Appendix H) was issued in September 2012.

4.15.4 Backfill Activities

ESUs 345 (220 cy) and 350 (130 cy) were used to backfill Trench SU 274. Final data from ESUs 345 and 350 were provided by the on-site laboratory, per the SUPRA Revision 3 (TtEC, 2011a). The analytical data from the screening activities at ESUs 345 and 350 are presented in Tables 3-3 and 3-4 of the *Final Survey Unit 274 Project Report* (Shaw, 2012aa; Appendix H), respectively. The analytical data packages prepared by the Basewide Radiological Contractor for these ESUs are presented in Appendix C of the *Final Survey Unit 274 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 780 cy of imported fill material from the Jericho import fill source was also used as backfill. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

4.16 Trench Survey Unit 277

Trench SU 277 included trench segments 06-D24-00-9A, 06-D24-32-9A, 06-D24-32-9B, and 06-D28-32-1D and Navy-approved import fill material used for backfill. The location of Trench SU 277 is shown on Figure 5. Trench SU 277 consists of one excavation located on the eastern end of WA 24 near the base of GMP, with one trench segment extending onto GMP. The footprint of Trench SU 277 was nonlinear and had a total excavated surface area of approximately 3,505 ft² (326 m²) and excavation depths varying between 3 and 5 feet bgs. Approximately 320 cy of soil were excavated from Trench SU 277.

4.16.1 Removal Action Activities

Excavation of Trench SU 277 commenced on March 25, 2011, in trench segment 06-24-00-9A, and removal of the pipe and soil was completed on March 29, 2011. A total of 32 truckloads (approximately 320 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 232 linear feet of pipe was removed from Trench SU 277. Pipe was found in the trench between 2 and 4 feet bgs. Trench segments 06-D24-00-9A and 06-D24-32-9A contained 8-inch diameter VCP and trench segments 06-D24-32-9B and 06-D24-32-1D contained 10-inch diameter VCP. All VCPs were disintegrated during excavation and were sent to the Basewide Radiological Contractor's RSY2 along with excavated soil.

An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 277. Consequently, there are no sediment sample analytical results associated with Trench SU 277.

Trench segment 06-D28-32-1D was terminated at the intersection to a 42-inch RCP connecting MH749 to the outfall at Berth 15. The pipe was plugged with nonshrink grout at the termination point. Two manholes were found in association with Trench SU 277 (MH709 and MH711). MH711 was removed on March 25, 2011, and MH709 was removed on March 28, 2011. Samples were not collected due to insufficient sediment volume. The manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

4.16.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 277 remained in place following the completion of the removal action.

4.16.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 14, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized below in Table 3-1 of the *Final Survey Unit 277 Project Report* (Shaw, 2012ad; Appendix H), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 277 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; however, this result did not exceed the project release criterion of 0.113 picocuries per gram (pCi/g) for ^{137}Cs . All of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g). Two of the 18 systematic samples were sent off site for total Sr as a surrogate for ^{90}Sr . Both samples reported below the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 277 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with

the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 277 were 0.047 pCi/g for ^{137}Cs , 0.139 pCi/g for ^{90}Sr , and 0.563 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.038 pCi/g for ^{137}Cs , 0.194 pCi/g for ^{90}Sr , and 0.625 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill used for Trench SU 277 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 277 resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 277 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 277 Project Report* (Shaw, 2012ad; Appendix H).

No further action is required, and unrestricted release is recommended for Trench SU 277 for the following reasons:

- All analytical results from systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Import backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill used for Trench SU 277 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 277 resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 277 Project Report* (Shaw, 2012ad; Appendix H) was issued in September 2012.

4.16.4 Backfill Activities

Excavated soil from the trench segments associated with Trench SU 277 was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used as backfill. Approximately 320 cy of material from the Jericho import fill source was used to

backfill Trench SU 277. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

4.17 Former Building 313, 313A, and 322 Sites

The following sections summarize the radiological work performed for the Former Building 313, 313A, and 322 Sites, provide an abbreviated history, identify the FSS results, and discuss regulatory concurrence for unrestricted radiological release of the property. The *Final, Final Status Survey Report, Former Building 313, 313A, and 322 Sites, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013b; Appendix H) details the radiological survey activities. The location of the Former Building 313, 313A, and 322 Sites is shown on Figure 5.

4.17.1 Description and Background

The Former Building 313, 313A, and 322 Sites are located northwest of Berth 14 and Building 274, in WA 24 (Figure 2). The three buildings were demolished prior to August 2004, and only compacted soil, asphalt, and underground sewer laterals originating from Buildings 313, 313A, and 322 remain. The Former Building 313, 313A, and 322 footprints, the surrounding area, and a buffer zone were evaluated for unrestricted release. Release of SD and SSs associated with these former building locations was addressed in the *Final Survey Unit 254 Project Report* (Shaw, 2012g; Appendix H).

The buildings were once used by the NRDL Instrumentation Laboratory, and as stockroom and storage areas. Radiological surveys were performed in 1955 and 2002 and ^{137}Cs was found above action levels in 2002 (NAVSEA, 2004). As identified in the *Final Revision 1, Final Task-Specific Plan, Former Building Sites 313, 313A, and 322, Characterization Survey and Remedial Action, Hunters Point Shipyard, San Francisco, California* the ROCs at the Former Building 313, 313A, and 322 Sites are ^{137}Cs , ^{239}Pu , ^{226}Ra , ^{90}Sr , and ^{232}Th (Shaw, 2011a).

4.17.2 Final Status Survey Summary

The Former Building 313, 313A, and 322 Sites survey activities commenced in the fall of 2010. The selected background soil reference area for Parcel D-1, including the Former Building 313, 313A, and 322 Sites, was located adjacent to Building 526. This area was determined to be nonimpacted from Navy operations (NAVSEA, 2004). For consistency with basewide practices, the Building 116 reference area in Parcel B was used for collection of background gamma scanning and static measurement data.

The NRC release limit for unrestricted use was applied in assessing the results of the surveys of the Former Building 313, 313A, and 322 Sites. Results were also analyzed using the more conservative EPA Office of Solid Waste and Emergency Response Directive 9200.1-34b to determine if the residual radioactivity, distinguishable from background radiation, resulted in a TEDE to an average member of the critical (screening) group exceeding 15 mrem/yr or an ELCR

of no more than 3E-04, and if the residual radioactivity had been reduced to levels that were ALARA. This radiological release process ensures that residual radioactivity will not result in individuals being exposed to unacceptable levels of radiation or radioactive materials.

Prior to the start of field activities, the Former Building 313, 313A, and 322 Sites area was included in the RCA boundary established for Parcel D-1. A site walk was conducted to identify any potential safety hazards.

Three SU were initially identified in the *Final Revision 1, Final Task-Specific Plan, Former Building Sites 313, 313A, and 322, Characterization Survey and Remedial Action, Hunters Point Shipyard, San Francisco, California* (Shaw, 2011a). These consisted of a Class 1 SU, comprised of the combined Building 313 and 313A footprints (D24-SU1); a Class 1 SU, comprised of the Building 322 footprint (D24-SU2); and Class 2 SU, consisting of a 15-foot buffer around the Class 1 SUs (D24-SU3). Initial sampling identified the presence of elevated ROCs in both the Class 1 and Class 2 SU. Therefore, the original Class 2 buffer was re-classified as a Class 1 SU, and a new Class 2 buffer (D24-SU4) was added.

Gamma walkover surveys were performed in accordance with *E&I Standard Operating Procedures*, No. T-RA-009, "Radiation Exposure Rate Monitoring" (Shaw E&I, 2014a). GPS equipment was used to provide an electronic record of measurements. The primary elements of each individual data record included northing and easting (both correction for reference satellite configuration and atmospheric distortion), date and time of measurement, and counts per minute (cpm) of the gamma detection instrument. The data were evaluated by a radiological professional for quality control, and then reviewed for count rates (cpm) that exceeded the investigation level threshold of the reference area mean plus 3σ . Elevated scan measurements were evaluated by conducting follow-up scans and static measurements biased to the highest scanning locations. Locations that exceeded the static measurement investigation levels were subject to biased soil sampling.

Gamma scanning was also performed to monitor all remediation activities, and scanning spot-checks were performed following remediation activities to verify that newly exposed surfaces did not exceed investigation levels.

Soil samples were collected from systematic locations, and six locations originally required remediation based on the soil sample analytical results for ^{137}Cs and ^{226}Ra that exceeded the release criteria. Approximately 24 cy of soil was remediated from Area 1, 23 cy from Area 2, 72 cy from Area 3, 8 cy from Area 4, 39 cy from Area 5, and 9 cy from Area 6. Each area is defined as shown on Figure C-1 of the *Final, Final Status Survey Report, Former Building 313, 313A, and 322 Sites, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013b; Appendix H). Following remediation, a second set of systematic samples

was taken in each of the SUs, and D24-SU4 required remediation based on soil sample analytical results for ^{137}Cs that exceeded the release criteria. Approximately 6.3 cy of soil was remediated from D24-SU4. Following remediation, a third set of systematic samples was taken in D24-SU4, and remediation was required based on soil sample analytical results for ^{137}Cs that exceeded the release criteria. Approximately 14.8 cy of soil was remediated from D24-SU4. Following remediation, a fourth set of systematic samples was taken in D24-SU4 and analyzed. No activity above the release criteria was identified in any of the systematic soil samples for any ROC.

Modeling for the Former Building 313, 313A, and 322 Sites was performed to calculate the residual dose to the critical group. The model of D24-SU1 resulted in a maximum above-background dose of 0.3872 mrem/yr and an ELCR of 5.191E-06. The model of D24-SU2 resulted in a maximum above-background dose of 0.1346 mrem/yr and an ELCR of 1.959E-06. The model of D24-SU3 resulted in a maximum above-background dose of 0.6565 mrem/yr and an ELCR of 8.605E-06. The model of D24-SU4 resulted in a maximum above-background dose of 0.6468 mrem/yr and an ELCR of 8.455E-06. These results meet the project dose and risk criteria of a 15 mrem/yr limit and an ELCR of less than 3E-04.

No evidence of residual radioactivity above the release criteria was found to be present at the Former Building 313, 313A, and 322 Sites. Based on the survey results and modeling efforts, the Former Building 313, 313A, and 322 Sites were recommended for unrestricted radiological release (Appendix H).

4.17.3 Regulatory Concurrence

The *Final, Final Status Survey Report, Former Building 313, 313A, and 322 Sites, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013b; Appendix H) was submitted to the Navy and the regulatory agencies in March 2013. Concurrence by the regulatory agencies for radiological release for unrestricted use of the Former Building 313, 313A, and 322 Sites was received in August 2013.

4.18 Building 274

The following sections summarize the radiological work performed for Building 274, provide an abbreviated history, identify the FSS results, and discuss regulatory concurrence for unrestricted radiological release of the property. The *Final, Final Status Survey Report, Parcel D-1, Building 274, Hunters Point Naval Shipyard, San Francisco, California* (Shaw, 2012ak; Appendix H) and details the radiological survey activities. The location of the Building 274 is shown on Figure 2.

4.18.1 Description and Background

Building 274 is located on 3rd Avenue between E Street and Morrell Street (Figure 2). Building 274 is a shop building with a shallow gable roof and corrugated metal siding, measuring 100 feet by 40 feet. Interior rooms within Building 274 (prior to removal in

preparation of the final survey) were built with traditional wood and sheetrock materials. Interior rooms consisted of nine enclosed rooms, two toilet facilities, and a large “open air” WA. The floor of Building 274 consists of a concrete pad.

Building 274 is located in IR 35, and is currently vacant and unoccupied. The planned future use of the area identified in the *Hunters Point Shipyard Reuse Plan* (San Francisco Redevelopment Agency, 1997) is as an “industrial use” area.

Building 274 was previously used for decontamination training and office space (NAVSEA, 2004). As identified in the HRA (NAVSEA, 2004), the ROCs for Building 274 are ^{137}Cs , ^{226}Ra , and ^{90}Sr .

4.18.2 Final Status Survey Summary

The Building 274 survey activities were initiated in the fall of 2010. Building 368 was used as a reference area for alpha, beta, and gamma surveys of sheet metal, and alpha and beta surveys of concrete. The Building 270 concrete pad was used to evaluate concrete gamma measurements. Building 368 is located immediately northeast of Building 274 and is constructed of similar materials. The Building 270 concrete pad exhibited similar ambient gamma levels to those found in Building 274.

For alpha and beta surveys, the investigation levels were 100 dpm/100 cm² and 1,000 dpm/100 cm², respectively. Loose surface contamination investigations to determine the fraction of removable activity present relative to the total activity were set at 20 percent of the values for total activity and were different than other investigation levels due to the lower release criteria for removable surface contamination. For gamma surveys, the investigation level was established as the reference area mean plus 3 sigma (σ), where σ is the standard deviation of the gamma readings in the reference area.

Prior to surveys, interior walls and structures within Building 274 were removed to allow access to the concrete slab and outer metal walls. Interior wall surfaces (transite wall panels) determined to be ACMs by pre-existing surveys, were removed, packaged, and disposed of as asbestos waste following pre and post-removal radiological surveys. Concrete interior partition wall footers were removed to facilitate scanning measurements using the floor monitor. All removed materials were surveyed prior to release and were found to be free of radioactive contamination.

Drainage and ventilation systems were identified for potential survey during the site preparation phase. Both static gamma measurements and smear samples were collected from locations inside and outside each drain (i.e., two measurements per drain). Ventilation systems were dismantled during the site preparation phase. Components from these systems were subject to 100 percent

alpha/beta and gamma scanning; alpha, beta, and gamma static measurements; and smear samples.

Building 274 was divided into six Class 1 SU and three Class 2 SU. Alpha and beta scan readings for these SU did not indicate the need for additional biased measurements. No systematic alpha or beta static measurements collected in the SU exceeded the release criteria. Several of the SU exhibited elevated gamma radiation levels; however, because no distinct hotspots were detected during the surveys and exposure rate levels were consistent throughout the building, these elevated measurements were concluded to be within natural variability of background. In addition, none of the swipe measurements indicated loose surface activity greater than the release criteria, and all of the swipe data were less than 20 percent of the total net residual activity identified within each SU.

Modeling for Building 274 was performed to calculate the residual dose to the critical group. The highest calculated dose and risk are associated with SU 7, with a dose of 0.081 mrem/yr and ELCR of 5.48E-08. The results of the modeling efforts were provided in Appendix E of the *Final, Final Status Survey Report, Parcel D-1, Building 274, Hunters Point Naval Shipyard, San Francisco, California* (Shaw, 2012ak; Appendix H).

The survey data document the final radiological condition of Building 274 and are of sufficient type and quality to support a decision to release Building 274 for unrestricted use. No further action is required.

4.18.3 Regulatory Concurrence

The *Final, Final Status Survey Report, Parcel D-1, Building 274, Hunters Point Naval Shipyard, San Francisco, California* (Shaw, 2012ak; Appendix H) was submitted to the Navy and the regulatory agencies in October 2012. Concurrence by the regulatory agencies for radiological release for unrestricted use of the Building 274 site was received in March 2013.

5.0 Work Area 25

WA 25 is located in the southern of Parcel D-1, to the south-southwest of the GMP (Figure 2). It is bounded on the east/southeast by Parcel F and the Bay, on the northwest by the Basewide Radiological Contractor's RSY2, and on the west by Parcel E. The radiological work activities performed for WA 25 included Trench SU 282. The following sections summarize the work activities completed in WA 25 to support the recommended radiological release for unrestricted use of the Parcel D-1 property.

5.1 Trench Survey Unit 283

Trench SU 283 included trench segments 06-D25-00-1A, 06-D25-00-2A, 06-D25-00-2B, 06-D25-00-2C, and 06-D25-00-3A and volumes of screened excavated soil and import fill material used for backfill. Trench SU 283 is located in the northeastern portion of WA 25 as shown on Figure 5. The total excavated surface area was approximately 5,576 ft² (520 m²) with excavation depths varying between 3 and 5 feet bgs. Approximately 360 cy of soil were excavated from Trench SU 283.

5.1.1 Removal Action Activities

Excavation of Trench SU 283 commenced on October 31, 2011, in trench segment 06-D25-00-3A, and removal of the pipe and soil was completed on November 4, 2011. A total of 36 truckloads (approximately 360 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 493 linear feet of pipe was removed from SU 283 during excavation activities. Pipe was found in trench between 2 to 4 feet bgs. Trench segments 06-D25-00-1A, -2A, -2B, -2C, and -3A contained 6-inch to 10-inch diameter VCP. All VCPs were crushed during excavation and were sent to the Basewide Radiological Contractor's RSY2 along with excavated soil.

Trench segments 06-D25-00-1A and -2C were terminated at the outfalls along Berth No. 22 and Berth No. 22, respectively. In addition, the other end of trench segment 06-D25-00-1A was terminated at Parcel D-1/the Basewide Radiological Contractor's RSY2 boundary. Nonshrink grout was used to plug the pipe at termination point.

The pier wall/pier cell where trench segment 06-D25-00-3A was located was badly damaged due to wave action and erosion in general over time. Approximately half of the pipe section indicated in the D-1 Sewer Design Plan (Shaw, 2010d) was washed away or lying in shallow water. Using an excavator with thumb attachment, Shaw extracted the majority of the pipes that were under water and excavated the remaining intact pipes as part of Trench SU 283.

Five manholes were associated with Trench SU 283 (MH782, MH783, MH784, MH785, and MH787). MH782 and MH785 were removed on November 2, 2011, and MH783, MH784, and MH787 were removed on November 3, 2011. Sufficient sediment for sample collection and analysis was available from MH785 and MH787. The analytical results for the sediment samples collected from MH785 did not indicate the presence of radioactivity above the release criteria for any ROC. The sediment sample collected from MH787 identified ^{137}Cs activity above the release criterion at 0.4798 pCi/g. Due to the presence of ^{137}Cs activity above the release criterion, the sediment sample with identified ^{137}Cs activity was sent to the off-site laboratory for total Sr analysis. The off-site analytical result for the elevated sample did not indicate the presence of Sr activity above the release criterion. The sediment sample analytical reports are provided in Appendix M. MH787 was disposed as LLRW by the Navy's LLRW contractor. The remaining four manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

5.1.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 283 remained in place following the completion of the removal action.

5.1.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on November 11, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 283 Project Report* (Shaw, 2012aj; Appendix I), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 283 Project Report*. None of the systematic samples had reported ^{137}Cs levels greater than the MDL; therefore, none of the results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples had reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . All samples reported as below the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 283 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for

material used as backfill in Trench SU 283 were 0.042 pCi/g for ^{137}Cs , 0.145 pCi/g for ^{90}Sr , and 0.436 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.038 pCi/g for ^{137}Cs , 0.162 pCi/g for ^{90}Sr , and 0.407 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 283 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. The model of Trench SU 283 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 283 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 283 Project Report* (Shaw, 2012aj; Appendix I).

No further action is required, and unrestricted release is recommended for Trench SU 283 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and imported fill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at SU 283 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. The model of the Trench SU 283 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 283 Project Report* (Shaw, 2012aj; Appendix I) was issued in September 2012.

5.1.4 Backfill Activities

Excavated soil from ESUs 619, 622, and 623 were used to backfill Trench SU 283. Samples from ESUs 619 and 623 were collected and labeled according to each individual pile, but were combined for evaluation of release and dose modeling. The analytical data from the screening activities at ESUs 619 and 623 are presented in Table 3-3, and the data from ESU 622 are

presented in Table 3-4 of the *Final Survey Unit 283 Project Report* (Shaw, 2012aj; Appendix I). Final data from the ESUs were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data packages prepared by TestAmerica St. Louis for ESUs 619, 622, and 623 are presented in Appendix C of the *Final Survey Unit 283 Project Report*.

Approximately 45 cy of imported fill material from the Jericho import fill source were also used to backfill Trench SU 283. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

6.0 Work Area 28

WA 28 is located in the middle of Parcel D-1, at the northwestern end of GMP (Figure 2). It is bounded on the south and east by Parcel F and the Bay, on the west by the Basewide Radiological Contractor's RSY2, and on the north by WA 24. The radiological work activities performed for WA 28 included Trench SU 258, 262, 270, 271, 278, 279, 280, 281, 282, and Building 383. The following sections summarize the work activities completed in WA 28 to support the recommended radiological release for unrestricted use of the Parcel D-1 property.

6.1 Trench Survey Unit 258

Trench SU 258 included two trench segments, 06-D29-00-15A and 06-D28-32-4A on GMP and the volume of excavated and imported fill material used for backfill. The location of Trench SU 258 is shown on Figure 5. The total excavated surface area was approximately 1,635 ft² (152 m²) with excavation depths between 4 and 6 feet bgs. Approximately 180 cy of material were excavated from Trench SU 258.

6.1.1 Removal Action Activities

Excavation of Trench SU 258 commenced on February 8, 2011, in trench segment 06-D29-00-15A, and removal of the pipe and soil was completed on February 28, 2011. A total of 18 truckloads (approximately 180 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 107 linear feet of pipe was removed from Trench SU 258 during excavation activities. Trench SU 258 pipe was found in trenches between 3 and 5 feet bgs. Trench segments 06-D29-00-15A and 06-D28-32-4A both contained 3-inch diameter steel pipe. All pipe sections were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 258. Consequently, there are no sediment sample analytical results associated with Trench SU 258. Following radiological screening, the pipes were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor. No manhole was removed from Trench SU 258.

6.1.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 258 remained in place following the completion of the removal action.

6.1.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on March 23, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 258 Project Report* (Shaw, 2012k; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 258 Project Report*. None of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . One of the two samples analyzed for total Sr (06-PD1T-258-015) reported a total Sr result that exceeded the project ^{90}Sr release criterion of 0.331 pCi/g. Sample 06-PD1T-258-015 was then analyzed for isotopic ^{90}Sr , and the result was reported below the MDL; therefore, the result did not exceed the project release criterion of 0.331 pCi/g.

For the FSS, Trench SU 258 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 258 were 0.042 pCi/g for ^{137}Cs , 0.064 pCi/g for ^{90}Sr , and 0.407 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.038 pCi/g for ^{137}Cs , 0.229 pCi/g for ^{90}Sr , and 0.478 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 258 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 2E-06. The model of Trench SU 258 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 258 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 258 Project Report* (Shaw, 2012k; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 258 for the following reasons:

- All analytical results from systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the radiologically-screened excavated soil and imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for SU 258 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 2E-06. The model of Trench SU 258 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 258 Project Report* (Shaw, 2012k; Appendix J) was issued in September 2012.

6.1.4 Backfill Activities

Soil from ESU 412 was used in part to backfill trench segment 06-D29-00-15A in Trench SU 258. Final data from ESU 412 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data from the screening activities at ESU 412 is summarized in Table 3-2 of the *Final Survey Unit 258 Project Report* (Shaw, 2012k; Appendix J). The analytical data packages prepared by TestAmerica St. Louis for ESU 412 are presented in Appendix C of the *Final Survey Unit 258 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 90 cy of imported fill material from the Jericho import fill source was also used to backfill trench segment 06-D28-32-4A in Trench SU 258. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

6.2 Trench Survey Unit 262

Trench SU 262 included trench segments 06-D28-32-1F, -1G, -1H, -1I, -1L, and -1M and a volume of imported fill material used for backfill. The location of Trench SU 262 is shown on Figure 5. Trench SU 262 is located along the GMP and is bordered by Trench SU 278 to the west, 276 to the south, and 268 to the east. The total surface area is approximately 13,219 ft²

(1,228 m²) of actual excavated trench, in varying depths between 3 and 8 feet bgs. Approximately 1,260 cy of soil were excavated from Trench SU 262.

6.2.1 Removal Action Activities

Excavation of Trench SU 262 commenced on December 2, 2010, in trench segment 06-D28-32-1F, and removal of the pipe and soil was completed on March 21, 2011. A total of 126 truckloads (approximately 1,260 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 767 linear feet of pipe was removed from Trench SU 262 during excavation activities. Pipe was found in trench between 2 to 7 feet bgs. Trench segments 06-D28-32-1L and -1M contained 27-inch and 15-inch diameter RCPs, respectively. Trench segments 06-D28-32-1G, -1H, and -1I contained 12-inch diameter RCPs. Trench segment 02-D28-32-1F was shown on the D-1 Sewer Design Plan (Shaw, 2010d) but was not found on site. The majority of the pipes was disintegrated upon removal and was transferred to the Basewide Radiological Contractor's RSY2 for processing along with the excavated soil. The remaining pipe sections were excavated out and placed on plastic sheeting pending further investigation. The excavated pipes were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Four manholes (MH750, MH752, MH756, and 781) were removed from Trench SU 262 (Table 9). MH781, MH750, and MH752 were removed on December 2, 3, and 7, 2010, respectively. MH756 was removed on January 31, 2011. Insufficient sediment was found in the manholes for sample collection and analysis. All four manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

6.2.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 262 remained in place following the completion of the removal action.

6.2.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 24 locations (18 samples collected on February 28, 2011, and additional six samples collected on September 29, 2011) and submitted to the HPNS on-site radiological laboratory for analysis. Per the requirements of the Section 17.4 of the SAP (Appendix B of the D-1 Radiological Work Plan [Shaw, 2010b]), 18 systematic samples were required. However, the SU size exceeded the 1,000-m² surface area limit from the Project Work Plan and therefore, additional samples were taken to provide adequate coverage of the SU. The number of samples needed per MARSSIM (DoD et al., 2000) was not recalculated as the SU size did not exceed the Class 1 recommended

SU size of 2,000 m². These samples were taken as a conservative measure to ensure that no large area within the trench would exceed the intended area coverage for a 1,000-m² surface area. The additional samples were placed manually within sampling voids in the SU, as the additional sample locations generated by VSP ended up clustered together, presumably due to the dimensions of the trench. The manual placement resulted in a better distribution of the additional samples throughout the trench.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 262 Project Report* (Shaw, 2012o; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 262 Project Report*. None of the 24 systematic samples reported ¹³⁷Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ¹³⁷Cs (0.113 pCi/g). All 24 systematic samples reported ²²⁶Ra levels greater than the MDL; however, no results exceeded the project release criterion for ²²⁶Ra (1.485 pCi/g).

Four out of 24 systematic samples were analyzed off site for total Sr as a surrogate for strontium-90 (⁹⁰Sr). All results for total Sr were reported as below the MDL, and were therefore below the project release criterion for ⁹⁰Sr (0.331 pCi/g).

For the FSS, Trench SU 262 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 262 were 0.040 pCi/g for ¹³⁷Cs, 0.000 pCi/g for ⁹⁰Sr, and 0.396 pCi/g for ²²⁶Ra. The trench unit average net residual radioactivity concentrations were 0.039 pCi/g for ¹³⁷Cs, 0.189 pCi/g for ⁹⁰Sr, and 0.478 pCi/g for ²²⁶Ra. The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 262 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 262 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 262 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 262 Project Report* (Shaw, 2012o; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 262 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 262 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 262 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 262 Project Report* (Shaw, 2012o; Appendix J) was issued in October 2012.

6.2.4 Backfill Activities

All soil excavated from Trench SU 262 was disposed according to requirements for chemical contamination. Only imported fill material from the Jericho source was used to backfill Trench SU 262. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were laid on top of Trench SU 262 footprint as part of GMP site restoration.

6.3 Trench Survey Unit 270

Trench SU 270 included trench segment 06-D28-32-2E and a volume of Navy-approved import fill material used for backfill. The location of Trench SU 270 is shown on Figure 5. Trench SU 270 is located in WA 28 on GMP. The total excavated surface area is approximately 4,232 ft² (393 m²) with excavation depths varying between 5 and 6 feet bgs. Approximately 320 cy of soil were excavated from Trench SU 270.

6.3.1 Removal Action Activities

Excavation of Trench SU 270 commenced on September 19, 2011, in trench segment 06-D28-32-2E, and removal of the pipe and soil was completed on the same day. A total

of 32 truckloads (approximately 320 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 and RSY3 for processing.

Approximately 235 linear feet of pipe was removed from Trench SU 270. Pipe was found in trench between 4 and 5 feet bgs. Trench segment 06-D28-32-2E contained 8-inch diameter VCP. The majority of the pipes was disintegrated upon removal and was transferred to the Basewide Radiological Contractor's RSY2 and RSY3 for processing along with the excavated soil. The remaining pipe sections were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 270. Consequently, there are no sediment sample analytical results associated with Trench SU 270. The pipes were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

One manhole (MH747) was removed from Trench SU 270 on September 19, 2011. Insufficient sediment was found for sample collection and analysis. The manhole was surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

6.3.2 *Piping Remaining in Place*

No known SD or SS piping associated with Trench SU 270 remained in place following the completion of the removal action.

6.3.3 *Final Status Survey Summary*

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected on September 27, 2011, from 18 locations and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 270 Project Report* (Shaw, 2012w; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 270 Project Report*. None of the 18 systematic samples reported ^{137}Cs levels greater than the MD; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . Both samples were reported as below the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 270 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 270 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.041 pCi/g for ^{137}Cs , 0.189 pCi/g for ^{90}Sr , and 0.539 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 270 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 270 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 270 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 270 Project Report* (Shaw, 2012w; Appendix J).

No further action is required, and unrestricted release is recommended for SU 270 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the radiologically-screened imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at SU 270 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 270 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 270 Project Report* (Shaw, 2012w; Appendix J) was issued in October 2012.

6.3.4 Backfill Activities

Excavated soil from the trench segments associated with Trench SU 270 was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used to backfill Trench SU 270. Approximately 320 cy of imported fill material from the Jericho import fill source were used as backfill. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were placed on top of Trench SU 270 footprint as part of GMP site restoration.

6.4 Trench Survey Unit 271

Trench SU 271 included trench segments 06-D28-32-1E, 06-D28-32-2A, 06-D28-32-2B, 06-D28-32-2C, and 06-D28-32-2D and a volume of imported fill material used for backfill. The location of Trench SU 271 is shown on Figure 5. Trench SU 271 is located in WA 28 on GMP. The total excavated surface area was approximately 7,136 ft² (663 m²) with excavation depths varying 3.5 and 8.5 feet bgs. Approximately 770 cy of soil were excavated from Trench SU 271.

6.4.1 Removal Action Activities

Excavation of Trench SU 271 commenced on September 19, 2011, in trench segment 06-D28-32-1E, and removal of the pipe and soil was completed on the September 26, 2011. A total of 77 truckloads (approximately 770 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY3 for processing.

Approximately 405 linear feet of pipe was removed from Trench SU 271. Pipe was found in the trench between 2.5 to 7.5 feet bgs. All trench segments contained 8-inch diameter VCP. The majority of the pipes was disintegrated upon removal and was transferred to the Basewide Radiological Contractor's RSY3 for processing along with the excavated soil. The remaining pipe sections were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 271. Consequently, there are no sediment sample analytical results associated with Trench SU 271. The pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Two manholes (MH754 and MH755) were removed from Trench SU 271 on September 26, 2011. Insufficient sediment was found for sample collection and analysis. The manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

6.4.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 271 remained in place following the completion of the removal action.

6.4.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on October 18, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 271 Project Report* (Shaw, 2012x; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 271 Project Report*. One of the systematic samples reported ^{137}Cs levels greater than the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Four of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . One of the four samples reported total Sr levels greater than the MDL; however, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 271 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 271 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.046 pCi/g for ^{137}Cs , 0.142 pCi/g for ^{90}Sr , and 0.492 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 271 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 271 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 6E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 271 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 271 Project Report* (Shaw, 2012x; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 271 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Imported backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at Trench SU 271 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 271 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 6E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04. All analytical results from final systematic samples collected from the trench were below project release criteria.

The *Final Survey Unit 271 Project Report* (Shaw, 2012x; Appendix J) was issued in October 2012.

6.4.4 Backfill Activities

Excavated soil from the trench segments was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used to backfill Trench SU 271. Approximately 770 cy of imported fill material from the Jericho import fill source were used as backfill. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were placed on top of Trench SU 271 footprint as part of GMP site restoration.

6.5 Trench Survey Unit 276

Trench SU 276 included trench segments 06-D28-32-2E, -2F, -2G, -1J, -1N, -1O, -1P, -1Q, as well as 06-D29-00-2B and a volume of excavated and imported fill material used for backfill. The location of Trench SU 276 is shown on Figure 5. Trench SU 276 consisted of three discrete excavations located on the eastern end of WA 28 of GMP as well as one dig site located on the western end of WA 29 of GMP. The footprint of Trench SU 276 was nonlinear and had a total excavated surface area of approximately 5,029 ft² (467 m²) with excavation depths varying between 2 and 5.2 feet bgs. Approximately 1,020 cy of material were excavated from Trench SU 276.

6.5.1 Removal Action Activities

Excavation of Trench SU 276 commenced on March 16, 2011, in trench segment 06-D28-32-1N, and removal of the pipe and soil was completed on the April 1, 2011. A total of 102 truckloads (approximately 1,020 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 871 linear feet of pipe was removed from Trench SU 276 during excavation activities. Pipe was found in trench between 1 to 4.2 feet bgs. SS trench segment 06-D28-32-2E contained 8-inch diameter VCP. SS trench segments 06-D28-32-2F and -2G in contained 5-inch diameter metal pipe. SD trench segment 06-D28-32-1J contained 15-inch diameter RCP. SD trench segments 06-D28-00-2B, 06-D28-32-1N, -1O, -1P, and -1Q contained 8-inch to 10-inch diameter VCP. The majority of the concrete and VCPs was disintegrated upon removal and were transferred to the Basewide Radiological Contractor's RSY3 for processing along with the excavated soil. The remaining concrete pipe sections and metal pipes were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 276. Consequently, there are no sediment sample analytical results associated with Trench SU 276. The pipes were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Six manholes (MH758, MH759, MH761, MH762, MH763, and MH765) were removed from Trench SU 276. MH759 and MH761 to MH763 were removed on March 16, 2011, MH765 was removed on March 17, 2011, and MH758 was removed on March 21, 2011. All manholes were placed on plastic sheeting pending further investigation. Insufficient sediment was found for sample collection and analysis. The manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

6.5.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 276 remained in place following the completion of the removal action.

6.5.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 14, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROC are summarized in Table 3-1 of the *Final Survey Unit 276 Project Report* (Shaw, 2012ac; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the

Final Survey Unit 276 Project Report. One of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Seventeen of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were sent to the off-site laboratory for total Sr as a surrogate for ^{90}Sr analysis. One total Sr result was reported greater than the MDL; no sample results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 276 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 276 were 0.041 pCi/g for ^{137}Cs , 0.084 pCi/g for ^{90}Sr , and 0.492 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.042 pCi/g for ^{137}Cs , 0.245 pCi/g for ^{90}Sr , and 0.513 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 276 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 2E-06. The model of Trench SU 276 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 276 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 276 Project Report* (Shaw, 2012ac; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 276 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and import fill soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.

- The model of the backfill material used for SU 276 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 2E-06. The model of Trench SU 276 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 276 Project Report* (Shaw, 2012ac; Appendix J) was issued in September 2012.

6.5.4 Backfill Activities

ESU 453 was used in part to backfill Trench SU 276 (170 cy). The analytical data from the screening activities at ESU 453 are presented below in Table 3-2 of the *Final Survey Unit 276 Project Report* (Shaw, 2012ac; Appendix J). Final data from ESU 453 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data package prepared by TestAmerica St. Louis for ESU 453 is presented in Appendix C of the *Final Survey Unit 276 Project Report*.

Approximately 850 cy of imported fill material from the Jericho import fill source was used to backfill Trench SU 276. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were placed on top of Trench SU 276 footprint as part of GMP site restoration.

6.6 Trench Survey Unit 278

Trench SU 278 included trench segments 06-D28-32-1A, 06-D28-32-1E, 06-D28-32-1B, 06-D24-32-9C, and 06-D28-00-5A) and a volume of Navy-approved excavated and imported soil used for backfill. The location of Trench SU 278 is shown on Figure 5. Trench SU 278 is located in WA 28 and 24 within the potentially radiologically impacted area associated with GMP. Trench SU 278 consisted of two distinct excavations: one segment is at the east end of Manseau Street, and the other is immediately east of Building 381. Approximately 600 cy of soil were excavated from Trench SU 278. The excavated surface area is approximately 5,637 ft² (524 m²) with excavation depths varying between 2 and 7 feet bgs.

6.6.1 Removal Action Activities

Excavation of Trench SU 278 commenced on March 29, 2011, in trench segment 06-D28-32-1B, and removal of the pipe and soil was completed on the April 1, 2011. A total of 60 truckloads (approximately 600 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 417 linear feet of pipe was removed from Trench SU 278. Pipe was found in the trench between 1 to 6 feet bgs. SD trench segments 06-D28-32-1B and -9C contained 1.5-inch

diameter metal pipe. SD trench segment 06-D28-32-1A contained 42-inch diameter RCP and 06-D28-32-1E contained 8-inch VCP. SD trench segment 06-D28-00-5A contained 10-inch diameter metal pipe and was terminated at the outfall near Berth No. 21. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 278. The majority of the concrete and VCPs was disintegrated upon removal and was transferred to the Basewide Radiological Contractor's RSY2 for processing along with the excavated soil. The remaining concrete pipe sections and metal pipes were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

One manhole (MH788) was removed on April 1, 2011 (Table 9). It was placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available from the manhole. The manhole was surveyed and disposed as LLRW by the Navy's LLRW contractor (Table 9).

One manhole (MH749) remained in place and was sampled (Table 8). The analytical results for the sediment samples collected from MH749 did not indicate the presence of radioactivity above the release criteria for any ROC. The sediment sample analytical reports are provided in Appendix M.

The original systematic sampling screening results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 278 Project Report* (Shaw, 2012ae; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 278 Project Report*. None of the 18 systematic samples reported ^{137}Cs levels greater than the MDA; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Ten of 18 systematic samples reported ^{226}Ra levels greater than the MDA; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

None of the original systematic samples that went through the on-site screening laboratory were sent off site for analyses associated with the other site ROCs.

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the SU 278 excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger (summarized in Appendix B of the *Final Survey Unit 278 Project Report* [Shaw, 2012ae]). Following data collection, scanning data was reviewed for completeness and to identify any elevated areas. One location was selected to further investigate potentially anomalous measurements (discussed further in Appendix B of the *Final Survey Unit 278 Project Report*). The area was found to exceed the scanning investigation

level for the instrument used, and four additional biased samples (06-PD1T-278-019 through 06-PD1T-278-022) were collected.

Samples 06-PD1T-278-019, -021, and -022 were found to have concentrations of ^{137}Cs above the project release criterion of 0.113 pCi/g. Those samples were analyzed off site for total Sr as a surrogate for ^{90}Sr and for plutonium-239 (^{239}Pu) analysis. Sample 06-PD1T-278-022 had a detected concentration of total Sr above the project release criterion of 0.331 pCi/g for ^{90}Sr , and follow-up ^{90}Sr analysis was performed. The ^{90}Sr result was below the MDL; however, the MDL was above the release criterion of 0.331 pCi/g for ^{90}Sr (Appendix A.5). The sample was recounted in order to lower the MDL, and neither the new result nor MDL exceeded the release criterion for ^{90}Sr (Appendix A.6 of the *Final Survey Unit 278 Project Report* [Shaw, 2012ae]). One ^{239}Pu result exceeded the MDL, but all ^{239}Pu results were below the project release criterion for ^{239}Pu . Table 3-2 of the *Final Survey Unit 278 Project Report* summarizes the biased sampling results.

Remediation activities were performed over an approximate 36-square-foot area in the vicinity of MH788. Soil was removed to a depth of approximately 2.5 feet below the trench surface, resulting in the removal of approximately 3 cy of material that was disposed as LLRW. Six post-remediation samples (06-PD1T-278-023 to 06-PD1T-278-028) were collected within the original location of remediation, and all results were below project release criteria, as shown in Table 3-3 of the *Final Survey Unit 278 Project Report* (Shaw, 2012ae; Appendix J).

6.6.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 278 remained in place following the completion of the removal action.

6.6.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on June 9, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-4 of the *Final Survey Unit 278 Project Report* (Shaw, 2012ae; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 278 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels greater than or equal to the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than or equal to the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . The results for total Sr did not exceed the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 278 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 278 were 0.042 pCi/g for ^{137}Cs , 0.084 pCi/g for ^{90}Sr , and 0.366 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.040 pCi/g for ^{137}Cs , 0.138 pCi/g for ^{90}Sr , and 0.403 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. The model of the trench SU resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 278 Project Report* (Shaw, 2012a; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 278 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the radiologically-screened excavated soil and imported backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. The model of the trench SU resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 278 Project Report* (Shaw, 2012ae; Appendix J) was issued in September 2012.

6.6.4 278 Backfill Activities

ESU 464 was used in part to backfill Trench SU 278 (60 cy). The analytical data from the screening activities at ESU 464 are presented in Table 3-5 of the *Final Survey Unit 278 Project Report* (Shaw, 2012ae; Appendix J). Final data from ESU 464 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data package prepared by TestAmerica St. Louis for ESU 464 is presented in Appendix C of the *Final Survey Unit 278 Project Report*.

In addition to radiologically-screened excavated soil, approximately 540 cy of imported fill material from the Jericho import fill source was used to backfill Trench SU 278. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b).

A stormwater swale was constructed on top of portion of Trench SU 278 (along trench segment 06-D28-32-1A). The trench was graded (by backfilling) to allow for gravity drainage along Manseau Street to MH744. Nonwoven geotextile was laid on top of the graded trench; follow by a layer of ½-inch to 2-inch diameter drain rocks. A SD catch basin was installed at the end of the swale, connecting to MH744. In addition, 4 to 6 inches of crushed asphalt were placed on remainder of Trench SU 278 in WA 28 (along trench segments 06-D28-32-1B and -1E) as part of GMP site restoration.

6.7 Trench Survey Unit 279

Trench SU 279 included trench segments 06-D28-32-1K, -1S, -1T, -1W, and -2I and a volume of imported fill material used for backfill. The location of SU 279 is shown on Figure 5. Trench SU 279 consists of one trench segment, 06-D28-32-1K, located on GMP. The total excavated surface area was approximately 8,479 ft² (788 m²) with excavation depths varying between 4.5 and 6.3 feet bgs. Approximately 700 cy of soil were excavated from Trench SU 279.

6.7.1 Removal Action Activities

Excavation of Trench SU 279 commenced on September 26, 2011, in trench segment 06-D28-32-1T, and removal of the pipe and soil was completed on the September 30, 2011. A total of 70 truckloads (approximately 700 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 or RSY3 for processing.

Approximately 573 linear feet of pipe was removed from Trench SU 279. Pipe was found in trench between 3.5 to 5.3 feet bgs. SS segment 06-D28-32-1W and SD segments 06-D28-32-2I,

-1S, and -1T contained 6-inch to 10-inch VCP. SD trench segments 06-D28-32-1K contained 12-inch diameter RCP.

During the excavation of trench segments 06-D28-32-1T and -1S, two previously unidentified pipe sections were found (06-D28-32-2I and -1W). Trench segment 06-D28-32-2I contained 6-inch VCP and extended approximately 225 feet south-southwest from MH747. Trench segment 06-D28-32-1W contained 6-inch VCP and started in the middle of trench segment 06-D28-32-2E, extending approximately 175 feet southwest.

The majority of the concrete and VCPs was disintegrated upon removal and were transferred to the Basewide Radiological Contractor's RSY2 and RSY3 for processing along with the excavated soil. The remaining concrete pipe sections were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 279. Consequently, there are no sediment sample analytical results associated with Trench SU 279. The pipes were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Three manholes (MH751, MH753, and MH757) were removed on September 27, 2011. The excavated manholes were placed on plastic sheeting pending further investigation. Insufficient sediment was found for sample collection and analysis. The manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

6.7.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 279 remained in place following the completion of the removal action.

6.7.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on October 18, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 279 Project Report* (Shaw, 2012af; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 279 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; however, none of the results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Sixteen of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . All three samples reported as below the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 279 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 279 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.039 pCi/g for ^{137}Cs , 0.146 pCi/g for ^{90}Sr , and 0.296 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 279 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1.2E-06. The model of Trench SU 279 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7.1E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 279 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 279 Project Report* (Shaw, 2012af; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 279 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Import backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at SU 279 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1.2E-06. The model of Trench SU 279 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7.1E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 279 Project Report* (Shaw, 2012af; Appendix J) was issued in September 2012.

6.7.4 Backfill Activities

Excavated soil from the trench segments associated with Trench SU 279 was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used to backfill Trench SU 279. Approximately 700 cy of imported fill material from the Jericho import fill source were used as backfill. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were placed on top of Trench SU 279 footprint of as part of GMP site restoration.

6.8 Trench Survey Unit 280

Trench SU 280 included seven trench segments 06-D28-70-3A, 06-D28-70-3B, 06-D28-32-3B, 06-D28-32-1X, 06-D28-32-1U, 06-D28-32-1V, and 06-D28-32-1T and a volume of imported fill material used for backfill. The location of SU 280 is shown on Figure 5. The total excavated surface area was approximately 8,709 ft² (809 m²) with excavation depths varying between 3.5 and 6.5 feet bgs. Approximately 870 cy of soil were excavated from Trench SU 280.

6.8.1 Removal Action Activities

Excavation of Trench SU 280 commenced on September 26, 2011, in trench segment 06-D28-32-1T, and removal of the pipe and soil was completed on the October 5, 2011. A total of 87 truckloads (approximately 870 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 and RSY3 for processing.

Approximately 598 linear feet of pipe was removed from Trench SU 280. Pipe was found in trench between 2.5 to 5.5 feet bgs. SD trench segments 06-D28-70-3A and -3B, trench segments 06-D28-32-3B, -1U, and -1V contained 4-inch VCP. SD trench segments 06-D28-32-1T and -1X contained 8-inch and 12-inch VCP, respectively.

Trench segments 06-D28-32-3B, -1U, -1V, and -1X, and 06-D28-70-3B were not previously identified in the D-1 Sewer Design Plan (Shaw, 2010d). Trench segment 06-D28-32-1U and -1V were discovered during excavation of MH746, and subsequently traced to trench segments 06-D28-32-1X, -3B, and 06-D28-70-3B.

The majority of the VCPs was disintegrated upon removal and was transferred to the Basewide Radiological Contractor's RSY2 or RSY3 for processing along with the excavated soil. The remaining VCP sections were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 280. Consequently, there are no sediment

sample analytical results associated with Trench SU 280. The pipes were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

One manhole (MH746) was removed on September 26, 2011. It was placed on plastic sheeting pending investigation. Insufficient sediment was found for sample collection and analysis. The manhole was surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

6.8.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 280 remained in place following the completion of the removal action.

6.8.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on October 19, 2011 and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 280 Project Report* (Shaw, 2012a; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 280 Project Report*. None of the systematic samples reported ^{137}Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Ten of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . Both samples reported as below the MDL; therefore, none of the results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 280 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 280 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.038 pCi/g for ^{137}Cs , 0.140 pCi/g for ^{90}Sr , and 0.180 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 280 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 280 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 280 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 280 Project Report* (Shaw, 2012ag; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 280 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at SU 280 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 280 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 280 Project Report* (Shaw, 2012ag; Appendix J) was issued in October 2012.

6.8.4 Backfill Activities

Excavated soil from the trench segments associated with Trench SU 280 was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used to backfill Trench SU 280. Approximately 870 cy of imported fill material from the Jericho import fill source were used for backfill. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were placed on top of Trench SU 280 footprint of as part of GMP site restoration.

6.9 Trench Survey Unit 281

Trench SU 281 included two trench segments (06-D28-32-2I and 06-D28-32-1W) and a volume of imported fill material used for backfill. The location of Trench SU 281 is shown on Figure 5. The total excavated surface area was approximately 2,262 ft² (210 m²) of with excavation depths varying between 2.5 and 5 feet bgs. Approximately 150 cy of soil were excavated from Trench SU 281.

6.9.1 Removal Action Activities

Excavation of Trench SU 281 commenced on October 5, 2011, in trench segment 06-D28-32-2I, and removal of the pipe and soil was completed on the same day. A total of 21 truckloads of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 155 linear feet of pipe was removed from Trench SU 281 during excavation activities. Trench SU 281 pipe was found in trench between 1.5 to 4 feet bgs. SD trench segment 06-D28-32-1W and SS trench segment 06-D28-32-2I contained 6-inch VCP. Both trench segments were not previously identified in the D-1 Sewer Design Plan (Shaw, 2010d). All VCPs were disintegrated upon removal and were transferred to the Basewide Radiological Contractor's RSY2 for processing along with the excavated soil. Because the piping was crushed and disintegrated, sampling the pipe sediment was not possible. No manhole was associated with Trench SU 281.

6.9.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 281 remained in place following the completion of the removal action.

6.9.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on November 10, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 281 Project Report* (Shaw, 2012ah; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 281 Project Report*. None of the systematic samples reported ¹³⁷Cs levels greater than the MDL; therefore, none of the results exceeded the project release criterion for ¹³⁷Cs (0.113 pCi/g). Seventeen of the 18 systematic samples reported ²²⁶Ra levels greater than the MDL; however, no results exceeded the project release criterion for ²²⁶Ra (1.485 pCi/g).

Three of 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . Two of the three samples were reported as below the MDL; no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 281 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 280 were 0.040 pCi/g for ^{137}Cs , 0.000 pCi/g for ^{90}Sr , and 0.396 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.040 pCi/g for ^{137}Cs , 0.147 pCi/g for ^{90}Sr , and 0.388 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 281 resulted in a maximum above-background dose of 0.07 mrem/yr and an ELCR of 1E-06. The model of Trench SU 281 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 281 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 281 Project Report* (Shaw, 2012ah; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 281 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at SU 281 resulted in a maximum above-background dose of 0.07 mrem/yr and an ELCR of 1E-06. The model of Trench SU 281 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 281 Project Report* (Shaw, 2012ah; Appendix J) was issued in October 2012.

6.9.4 Backfill Activities

Excavated soil from the trench segments associated with Trench SU 281 was disposed according to the requirements for chemically contaminated soil. Only imported fill material was used to backfill Trench SU 281. Approximately 150 cy of imported fill material from the Jericho import fill source were used as backfill. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were placed on top of Trench SU 281 footprint of as part of GMP site restoration.

6.10 Trench Survey Unit 282

Trench SU 282 included trench segment 06-D28-00-6A and a volume of excavated fill material used for backfill. The location of Trench SU 282 is shown on Figure 5. The total excavated surface area was approximately 230 ft² (21 m²) with an excavation depth of 2 feet bgs. Approximately 10 cy of soil were excavated from Trench SU 282.

6.10.1 Removal Action Activities

Excavation of Trench SU 282 commenced on October 21, 2011, in trench segment 06-D28-00-3A, and removal of the pipe and soil was completed on the same day. One truckload (approximately 10 cy) of overburden soil and peripheral material was excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 26 linear feet of pipe was removed from Trench SU 282 during excavation activities. Pipe was found in trench around 1 foot bgs. SS trench segment 06-D28-00-6A contained 4-inch metal pipe. This trench segment originated from Building 381 and was terminated at the Parcel D-1/RSY2 boundary. All metal pipe sections were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 282. Consequently, there are no sediment sample analytical results associated with Trench SU 282. The pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor. No manhole was associated with Trench SU 282.

6.10.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 282 remained in place following the completion of the removal action.

6.10.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan*,

Version 6.0 (PNNL, 2010). Final systematic samples were collected from 18 locations on November 15, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 282 Project Report* (Shaw, 2012ai; Appendix J), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 282 Project Report*. None of the systematic samples reported ^{137}Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . All samples reported as below the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 282 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 282 were 0.043 pCi/g for ^{137}Cs , 0.200 pCi/g for ^{90}Sr , and 0.440 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.045 pCi/g for ^{137}Cs , 0.157 pCi/g for ^{90}Sr , and 0.476 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 282 resulted in a maximum above-background dose of 0.07 mrem/yr and an ELCR of 1E-06. The model of Trench SU 282 resulted in a maximum above-background dose of 0.07 mrem/yr and an ELCR of 1E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 282 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 282 Project Report* (Shaw, 2012ai; Appendix J).

No further action is required, and unrestricted release is recommended for Trench SU 282 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.

- Analytical results from the radiologically-screened excavated soil were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at Trench SU 282 resulted in a maximum above-background dose of 0.07 mrem/yr and an ELCR of 1E-06. The model of Trench SU 282 resulted in a maximum above-background dose of 0.07 mrem/yr and an ELCR of 1E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 282 Project Report* (Shaw, 2012ai; Appendix J) was issued in October 2012.

6.10.4 Backfill Activities

Excavated soil from ESUs 619 and 623 were used to backfill Trench SU 282. Samples from ESUs 619 and 623 were collected and labeled according to each individual pile but were combined for evaluation of release and dose modeling. The analytical data from the screening activities at ESUs 619 and 623 are presented in Table 3-3 of the *Final Survey Unit 282 Project Report* (Shaw, 2012ai; Appendix J). Final data from the ESUs were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data packages prepared by TestAmerica St. Louis for ESUs 619 and 623 are presented in Appendix C of the *Final Survey Unit 282 Project Report*. No imported fill material was used to backfill Trench SU 282.

6.11 Building 383

The following sections summarize the radiological work performed for the Building 383 Site, provide an abbreviated history, identify the FSS results, and discuss regulatory concurrence for unrestricted radiological release of the property. The *Final, Final Status Survey Report, Building 383 Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013c; Appendix J) details the radiological survey activities. The location of the Building 383 Site is shown on Figure 2.

6.11.1 Description and Background

The Building 383 Site is located between Berths 16 and 20 on GMP in WA 28 within Parcel D-1 (Figure 2). The HRA (NAVSEA, 2004) identified the Building 383 Area as a separate radiologically impacted area from the GMP.

Building 383 was a two-story steel and concrete, flat-roofed building, with a footprint measuring approximately 110 feet by 60 feet (Figure 2). Building 383 was demolished in late 2010 to early 2011 by Shaw in coordination with the Navy to facilitate the radiological survey and remediation

of the building footprint. Additional foundation and support materials were removed in from the area in 2012. The Building 383 Area currently consists of the land associated with the building footprint and buffer zone.

Building 383 was constructed in 1985 at the former location of a small building where radioluminescent deck markers from ships were stored and managed (NAVSEA, 2004). The exact location of the small “turn-in” building is not known. The Building 383 Site was designated as a radiologically impacted site because of the use of the area before construction of the recent building.

There is no current use of the Building 383 Site. The San Francisco Redevelopment Agency *Hunters Point Shipyard Reuse Plan* identifies the planned future use of the area as a maritime industrial area (1997). The ROCs for the Building 383 Site are ^{137}Cs , ^{239}Pu , ^{226}Ra , and ^{90}Sr (NAVSEA, 2004).

6.11.2 Final Status Survey Summary

The Building 383 Site survey activities were initiated in the fall of 2010. The selected background soil reference area for Parcel D-1, including the Former Building 383 Site, was located adjacent to Building 526. This area was determined to be nonimpacted from Navy operations (NAVSEA, 2004). For consistency with basewide practices, the Building 116 reference area in Parcel B was used for collection of background gamma scanning and static measurement data.

The NRC release limit for unrestricted use was applied in assessing the results of the surveys of the Former Building 383 Site. Results were also analyzed using the more conservative EPA Office of Solid Waste and Emergency Response Directive 9200.1-34b to determine if the residual radioactivity, distinguishable from background radiation, resulted in a TEDE to an average member of the critical (screening) group exceeding 15 mrem/yr or an ELCR of no more than $3\text{E-}04$, and if the residual radioactivity had been reduced to levels that were ALARA. This radiological release process ensures that residual radioactivity will not result in individuals being exposed to unacceptable levels of radiation or radioactive materials.

Prior to the start of field activities, the Building 383 Site was included in the RCA boundary established for Parcel D-1. A site walk was conducted to identify any potential safety hazards. Prior to conducting soil surveys and sampling, the interior of Building 383 was vacated and cleaned out. The building was then demolished and the foundation slab and underlying asphalt were removed. In June 2012, additional subgrade footer walls and the elevator shaft well were removed.

The Building 383 Site was divided into one Class 1 SU and one Class 2 SU. Gamma scan measurements were performed on 100 percent of the Class 1 and approximately 100 percent of the Class 2 SU. All scan results were below project investigation levels and small areas of elevated activity were not observed. Gamma static measurements were collected at systematic locations. Two static measurements exceeded the investigation levels specified for the instruments used at sample locations, and the associated samples either were below the project release criteria or were remediated. Soil samples were collected from systematic locations. No activity above the release criteria was identified in any of the systematic soil samples for any ROC.

Modeling for the Former Building 383 Site was performed to calculate the residual dose to the critical group. The model of B383-SU1 resulted in a maximum above-background dose of 0.5170 mrem/yr and an ELCR of 6.823E-06. The model of B383-SU2 resulted in a maximum above-background dose of 0.5082 mrem/yr and an ELCR of 6.717E-06. These results meet the project dose and risk criteria of a 15 mrem/yr limit and an ELCR of less than 3E-04.

No evidence of residual radioactivity above the release criteria was found to be present at the Building 383 Site. Based on the survey results and modeling efforts, the Building 383 Site was recommended for unrestricted radiological release (Appendix J).

6.11.3 Regulatory Concurrence

The *Final, Final Status Survey Report, Building 383 Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013c; Appendix J) was submitted to the Navy and the regulatory agencies in March 2013. Concurrence by the regulatory agencies for radiological release for unrestricted use of the Building 383 Site was received in August 2013.

6.12 Gun Mole Pier

The following sections summarize the radiological work performed for the GMP in WAs 28 and 29, provide an abbreviated history, identify the FSS results, and discuss regulatory concurrence for unrestricted radiological release. The *Final, Final Status Survey Report, Gun Mole Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2014b; Appendix J) details the radiological survey activities. The location of the GMP is shown on Figure 5.

6.12.1 Description and Background

The GMP is located in the southeast portion of Parcel D-1 and bounded on the west side by Manseau Street (Figure 2). It was identified in the HRA as radiologically impacted (NAVSEA, 2004). The GMP, also known as the re-gunning pier, is a large, flat rectangular structure. It is approximately 400 feet wide and 1,700 feet long (Figure 5). The major feature of the pier is the 450-ton gantry crane (i.e., the re-gunning crane) originally used to remove gun turrets from ships. Building footprints 380, 384, 377, 385, 379, 378, 370, and 376 and the

re-gunning crane are located on the pier. The GMP was used for a variety of radiological activities beginning shortly after World War II. Known radiological uses of the pier include the following:

- Radioactive pavement decontamination study
- Decontamination studies on NRDL Experimental Barge YFN-809 and on a contaminated B-17 aircraft
- Landing area for NRDL Barge YFNX-16
- Decontamination and laboratory facility
- Support for decontamination experiments and operations of surface vessels in the late 1940s

Preparation of the GMP for FSS included the demolition of Buildings 370, 375 (360), 376, 377, 378, 379, 380, 383, 384, 385, the demolition of a storage shed adjacent to Building 380, the removal of surface covering asphalt, the removal of concrete building foundations, the removal of crane and train steel rails, the removal of wood rail ties, and the removal of SS/SD lines. Demolition of the GMP buildings included the pre-demolition performance of lead-based paint and asbestos abatement following pre-existing building characterization survey data. All material removed during abatement of the building surfaces were dispositioned as nonmixed waste as the building structures were not characterized as radiologically impacted. All building material generated from the structural demolition was disposed of as demolition debris.

Demolition of the buildings and the removal of the associated electrical infrastructure required the re-routing of the Federal Aviation Agency aircraft warning light electrical feed lines. The electrical lines were installed along the pier sea wall, and then traverse across the ground to the re-gunning crane.

The removed asphalt from each designated SU was separately staged in a lay down area adjacent to the GMP pending the review of the *Final, Final Status Survey Report, Gun Mole Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2014b; Appendix J) ground survey and sampling data. Following the review of the ground surface FSS survey and sampling data, all removed asphalt from the GMP (21,457 tons), excluding asphalt removed from GMP SU 26 (290 tons) was crushed and reused as ground cover on the GMP. The asphalt removed from GMP SU 26 was handled and disposed of as LLRW (Section 9.2).

The removed steel crane and train rails were also staged in a lay down area adjacent to the GMP. All steel crane and train rails were surveyed. All accessible surfaces of the steel crane and train rails were surveyed for fixed and removable surface contamination. No measurements exceeding the project surface contamination criteria were identified (Table 2).

The wood rail ties were initially removed and prepared for disposition as LLRW. Following additional post-removal reviews in coordination with the Navy, the wood rails ties were staged adjacent to the GMP pending future release surveys.

As identified in the HRA (NAVSEA, 2004), the ROCs at GMP are ^{137}Cs , plutonium-239 (^{239}Pu), ^{226}Ra , and ^{90}Sr (Table 1).

6.12.2 Final Status Survey Summary

The GMP was prepared for survey in late 2010 and the debris was radiologically surveyed and cleared as appropriate. The site was initially partitioned into 72 Class 1 SUs and one Class 2 SU with an area extending out as a 15 ft buffer zone on the landward side of the pier. Subsequent evaluations that established a requirement to remove additional foundations as well as the agreement that some foundations and features were acceptable to remain in place, identified that a realignment of SU boundaries was necessary. Large scale soil remediation in the potential placement location of the NRDL barge, also contributed to the realignment of SU boundaries. For the performance of the FSS on the GMP, the GMP was partitioned into 71 Class 1 SUs and 2 Class 2 SUs. Prior to the removal of ground surface covering asphalt and the removal of crane and train steel rails and wooden ties, A 100 percent scan for gamma emitters was performed in the Class 1 SUs, and a 50 percent scan for gamma emitters was performed in the Class 2 SU to identify small areas of elevated activity; none were found. The surface covering asphalt was removed and staged in separate piles from each designated surface SU, the asphalt was staged for further radiological release evaluation. The metal crane and train steel rails and the wooden ties were staged for radiological release evaluation. The 100 percent gamma scan in the Class 1 SUs and the 50 percent gamma scan of the Class 2 SUs was again performed following the removal of the surface covering asphalt and crane and train steel rails and wooden ties. Two articles of radioactive material were identified during SUs FSS gamma scans. The discrete items were identified and removed with the additional actions of soil remediation in the immediate area. Post-remediation soil samples met the FSS release criteria. A minimum of 20 systematic samples were collected from each SU and analyzed at the on-site (initial screening) and off-site (final results) laboratories. Soil remediation was required in 16 of the 77 GMP SUs due to elevated ^{137}Cs , ^{226}Ra , or ^{90}Sr results.

Surveys for fixed and removable surface contamination were performed on all remaining GMP concrete infrastructure, including the pier walls; utility hoods; building foundations; re-gunning crane support foundations and base pedestals; electrical pads, vaults, and corridors; and other miscellaneous items. The utility corridor surveys for one utility corridor, GEC04, were performed following a work variance (WV) (WV#5) to the *Final, Final Task-Specific Plan Addendum, Gun Mole Pier Area Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California* (Shaw, 2012b), due to the presence of deteriorate asbestos-containing material within

the corridor (Appendix D). A total of 9 concrete pads, 88 vaults, 37 utility hoods, 14 pier wall segments, 2 building foundations, 4 crane support foundations, 8 crane base pedestals, the elevator shaft building, and 4 utility corridors were surveyed and no measurements exceeding the project surface contamination criteria were identified.

Surveys on GMP were completed in July 2013.

No further action is required and unrestricted release is recommended for GMP based on the following reasons:

- All analytical results for ^{226}Ra , ^{137}Cs , and total Sr from final systematic samples collected from the GMP and buffer area were below project release criteria, with the exception of four SUs (GMP24, GMP25, GMP30, and GMP77) which had one or more final samples with analytical results that exceeded the project release criteria for ^{137}Cs . For those SUs, an initial dose and risk modeling run was performed with inputs determined as described above. In addition, a second run was performed conservatively using the maximum detected results for elevated ROCs along with the average results for non-elevated ROCs for the SU as the representative input for the calculation.
- Impacted soil areas with elevated sampling results were sufficiently bounded and remediated, as demonstrated in the *Final, Final Status Survey Report, Gun Mole Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2014b; Appendix J).
- Gamma scanning was performed on 100 percent of GMP SUs and two discrete sources (commodities) were found. In both cases the commodity and adjacent soil was removed and post-removal soil sampling confirmed that no residual contamination was left where the commodity was found. All other potential scanning anomalies were investigated and found to represent variability in background.
- Surface contamination surveys were performed on all remaining GMP infrastructure and all survey results were below project surface contamination criteria.
- Qualitative ALARA criteria were met.

Dose and risk modeling performed for the GMP SUs resulted in a maximum above-background dose of 2.125 mrem/yr and ELCR of 3.172E-05, both from GMP51. This dose and risk modeling demonstrated that the residual dose and risk, under a conservative exposure scenario, were well below the project dose limit of 15 mrem/yr and ELCR of 3E-04 and therefore meet project requirements for unrestricted release.

6.12.3 Regulatory Concurrence

The *Final, Final Status Survey Report, Gun Mole Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2014b; Appendix J) was submitted to regulatory agencies

in September 2013. Concurrence by the regulatory agencies for radiological release for unrestricted use of the GMP is pending.

7.0 Work Area 29

WA 29 is located on the GMP at the eastern end of Parcel D-1 (Figure 2). The GMP is divided into two WAs: WA 28 and WA 29. WA 29 encompasses the southeastern portion of the GMP. It is bounded on the northwest by Parcel D-1 WA 28 and the remaining sides of the pier are surrounded by Parcel F and the Bay. The radiological work activities performed for WA 29 included Trench SUs 266, 267, 268, 269, 275, and 276 and surveys of the remaining features and foundations within the pier following demolish activities. The following sections summarize the work activities completed in WA 29 to support the recommended radiological release for unrestricted use of the Parcel D-1 property.

7.1 Trench Survey Unit 266

Trench SU 266 included trench segments 06-D29-00-14G, -14F, -14E, -14D, -14C, -14B, -14A; and 06-D29-68-14F, -14D, and -14A and a volume of excavated and imported fill material used for backfill. The location of Trench SU 266 is shown on Figure 5. Trench SU 266 is located along the GMP. The total excavated surface area was approximately 7,815 ft² (726 m²) with excavation depths varying between 3 and 5.8 feet bgs. Approximately 680 cy of soil were excavated from Trench SU 266.

7.1.1 Removal Action Activities

Excavation of Trench SU 266 commenced on February 9, 2011, in trench segment 06-D29-00-14G, and removal of the pipe and soil was completed on March 4, 2011. A total of 68 truckloads (approximately 680 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 600 linear feet of pipe was removed from Trench SU 266. Pipe was found in the trench between 2 to 4.8 feet bgs. All trench segments contained 8-inch to 12-inch diameter CMPs. All pipe sections were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

A portion of trench segment 06-D29-68-14D was not previously identified in the D-1 Sewer Design Plan (Shaw, 2010d). An additional 19 linear feet of pipe was found extending from MH744 toward and connecting to an electrical corridor (GECSU25). Trench segment 06-D29-00-14G was terminated at the outfall along Berth No. 19.

Six manholes (MH744, MH776 to MH780) were removed from Trench SU 266 (Table 9). MH778 and MH780 were removed on March 1, 2011. MH779 was removed on March 2, 2011. MH744, MH776, and MH777 were removed on March 4, 2011. Sufficient sediment for sample

collection and analysis was found in MH780 (Table 8). The analytical results for the sediment samples collected from MH780 did not indicate the presence of radioactivity above the release criteria for any ROC. The sediment sample analytical reports are provided in Appendix M. The manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

The original systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 266 Project Report*. One of the 18 systematic samples (06-PD1T-266-011) reported ^{137}Cs levels greater than the MDA; and that result exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Eight out of 18 systematic samples reported ^{226}Ra levels greater than the MDA; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three out of the 18 original systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . One of the results for total Sr was reported above the MDL; however, this result did not exceed the project release criterion for ^{90}Sr (0.331 pCi/g).

Sample 06-PD1T-266-011 was analyzed off site for plutonium-239 (^{239}Pu). The reported ^{239}Pu concentration was greater than the MDL; however, it did not exceed the project release criterion for ^{239}Pu (2.590 pCi/g).

Remedial activities were performed over an approximate 162-ft² area that encompassed the area represented by sample 06-PD1T-266-011. Soil was removed to a depth of 0.5 foot below the trench surface, thus resulting in the removal of approximately 3 cy of material that was disposed as LLRW. Three post-remediation samples (06-PD1T-266-019, 06-PD1T-266-020, and 06-PD1T-266-021) were collected at the original location of sample 06-PD1T-266-011 and the adjacent area, and one result (06-PD1T-266-019) exceeded the project release criterion for ^{137}Cs , as shown in Table 3-2 of the *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K).

Remedial activities were performed again over an approximate 150- ft² area that encompassed the area represented by sample 06-PD1T-266-019. Soil was removed to a depth of 1 foot below the trench surface, resulting in the removal of approximately 5.5 cy of material that was disposed as LLRW. Five post-remediation samples (06-PD1T-266-029 to 06-PD1T-266-033) were collected at the original location of sample 06-PD1T-266-019 and the adjacent area, and two results (06-PD1T-266-029 and 06-PD1T-266-030) exceeded the project release criterion for ^{137}Cs , as shown below in Table 3-3 of the *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K).

Remedial activities were performed again over an approximate 150 ft² area that encompassed the area represented by samples 06-PD1T-266-029 and 06-PD1T-266-030. Soil was removed to a depth of 1 foot below the trench surface, thus resulting in the removal of approximately 5.5 cy of material that was disposed as LLRW. Five post-remediation samples (06-PD1T-266-034, to 06-PD1T-266-038) were collected at the original location of samples 06-PD1T-266-029 and 06-PD1T-266-030 and the adjacent area, and all results were below the project release criteria, as shown in Table 3-4 of the *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K).

7.1.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 266 remained in place following the completion of the removal action.

7.1.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on October 3, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-5 of the *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 266 Project Report*. None of the 18 systematic samples reported ¹³⁷Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ¹³⁷Cs (0.113 pCi/g). All 18 systematic samples reported ²²⁶Ra levels greater than the MDL; however, no results exceeded the project release criterion for ²²⁶Ra (1.485 pCi/g).

Two of the 18 final systematic samples were analyzed off site for total Sr as a surrogate for ⁹⁰Sr. The results for total Sr did not exceed the MDL; therefore, no results exceeded the project release criterion for ⁹⁰Sr (0.331 pCi/g).

For the FSS, Trench SU 266 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 266 were 0.043 pCi/g for ¹³⁷Cs, 0.114 pCi/g for ⁹⁰Sr, and 0.378 pCi/g for ²²⁶Ra. The trench unit average net residual radioactivity concentrations were 0.042 pCi/g for ¹³⁷Cs, 0.149 pCi/g for ⁹⁰Sr, and 0.330 pCi/g for ²²⁶Ra. The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 266 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. The model of Trench SU 266 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD output files for the two Trench SU 266 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K).

No further action is required, and unrestricted release is recommended for Trench SU 266 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the radiologically-screened excavated soil and imported backfill material were below project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 266 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. The model of Trench SU 266 resulted in a maximum above-background dose of 0.5 mrem/yr and an ELCR of 7E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K) was issued in October 2012.

7.1.4 Backfill Activities

Excavated soil from ESUs 412 (160 cy), 424 (250 cy), and 434 (80 cy) were used in part to backfill Trench SU 266. The analytical data from the screening activities at ESUs 412, 424, and 434 are presented in Tables 3-6 through 3-8 of the *Final Survey Unit 266 Project Report* (Shaw, 2012s; Appendix K), respectively. Final data from the ESUs were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data packages prepared by TestAmerica St. Louis for ESUs 412, 424, and 434 are presented in Appendix C of the *Final Survey Unit 266 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 190 cy of imported fill material from the Jericho import fill source were also used to backfill Trench SU 266. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). As part of the GMP site restoration, a layer of 4-inch to 6-inch of crushed asphalt was placed on top of Trench SU 266 footprint.

7.2 Trench Survey Unit 267

Trench SU 267 included trench segments 06-D29-00-1B, -9A, -9B, -10A, -11A, -11B, -11C, and -11D as well as 06-D29-68-1B, -10A, -11B and -11E and a volume of imported and excavated fill material used for backfill. Trench SU 267 is located towards the southeast end of GMP crossing the pier width, as shown on Figure 5. The total excavated surface area was approximately 9,176 ft² (857 m²) with excavation depths varying between 2 and 6 feet bgs. Approximately 600 cy of soil were excavated from Trench SU 267.

7.2.1 Removal Action Activities

Excavation of Trench SU 267 commenced on February 9, 2011, in trench segment 06-D29-68-11B, and removal of the pipe and soil was completed on March 30, 2011. A total of 60 truckloads (approximately 600 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing. During excavation of Manhole MH774, a previously unidentified SD line was found and designated 06-D29-00-11D. Approximately 101 linear feet of this pipe segment was identified extending toward MH773. Likewise, during excavation MH775, another previously unidentified SD line was found and designated 06-D29-68-11E. This line extended approximately 35 linear feet east from MH775.

Approximately 778 linear feet of pipe was removed from Trench SU 267 during excavation activities. Pipe was found in trench between 1 to 5 feet bgs. All trench segments contained 2-inch to 10-inch diameter CMPs. All pipe sections were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Five manholes (MH745, MH772 to MH775) were removed from Trench SU 267. MH745 and MH775 were removed on March 8, 2011. MH773 and MH774 were removed on March 9, 2011. MH772 was removed on March 15, 2011. Sufficient sediment for sample collection and analysis were found in MH745 and MH775 (Table 8). The analytical results for the sediment sample collected from MH745 and MH775 did not indicate the presence of radioactivity above the release criteria for any ROC. The sediment sample analytical reports are provided in Appendix M. The manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

7.2.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 267 remained in place following the completion of the removal action.

7.2.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 15, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The final systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 267 Project Report* (Shaw, 2012t; Appendix K), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 267 Project Report*. None of the 18 systematic samples reported ^{137}Cs levels greater than the MDL, therefore no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Seventeen of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were sent to the off-site laboratory for total Sr analysis as a surrogate for ^{90}Sr . One of the samples was reported at a level greater than the MDL for total Sr; however, the result did not exceed the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 267 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 267 were 0.041 pCi/g for ^{137}Cs , 0.039 pCi/g for ^{90}Sr , and 0.392 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.040 pCi/g for ^{137}Cs , 0.211 pCi/g for ^{90}Sr , and 0.301 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 267 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. The model of Trench SU 267 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 267 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 267 Project Report* (Shaw, 2012t; Appendix K).

No further action is required, and unrestricted release is recommended for Trench SU 267 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and import fill soil used for backfill met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 267 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. The model of Trench SU 267 resulted in a maximum above-background dose of 0.8 mrem/yr and an ELCR of 1E-05. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 267 Project Report* (Shaw, 2012t; Appendix K) was issued in September 2012.

7.2.4 Backfill Activities

ESUs 434 (100 cy) and 444 (40 cy) were used to backfill Trench SU 267. The analytical data from the screening activities at ESUs 434 and 444 are presented in Tables 3-2, and 3-3 of the *Final Survey Unit 267 Project Report* (Shaw, 2012t; Appendix K), respectively. Final data from ESUs 434 and 444 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data packages prepared by TestAmerica St. Louis for ESUs 434 and 444 are presented in Appendix C of the *Final Survey Unit 267 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 460 cy of imported fill material from the Jericho import fill source was also used to backfill Trench SU 267. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). As part of the GMP site restoration, 4- to 6-inches of crushed asphalt were placed on top of Trench SU 267 footprint.

7.3 Trench Survey Unit 268

Trench SU 268 included trench segments 06-D28-32-1M, -1N, -1R, and -2H as well as 06-D29-00-1A, -2A, and -16A and volumes of screened excavated soil and import fill material used for backfill. Trench SU 268 starts at the western end of WA 28 on GMP and extends into WA 29 as shown on Figure 5. The footprint of Trench Unit 268 had a total excavated surface

area of approximately 8,450 ft² (785 m²) with excavation depths varying between 2 and 4.3 feet bgs. Approximately 740 cy of soil were excavated from Trench SU 268.

7.3.1 Removal Action Activities

Excavation of Trench SU 268 commenced on March 10, 2011, in trench segment 06-D29-00-1A, and removal of the pipe and soil was completed on March 21, 2011. A total of 74 truckloads (approximately 740 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing. During excavation of trench segment 06-D29-00-1A, a previously unidentified SD line was found and designated 06-D29-00-16A. Approximately 224 linear feet of this pipe segment was identified in between SS line 06-D29-00-1A and the large concrete pad in the middle of GMP (designated as GCP01).

Approximately 1,129 linear feet of pipe was removed from Trench SU 268. Pipe was found in the trench between 1 and 3.3 feet bgs. SS trench segments 06-D29-00-1A and 06-D28-32-2H contained 5-inch diameter metal pipes. SD trench segment 06-D29-00-16A contained 4-inch wide cast-in-place concrete drain. All metal pipe sections and concrete drain section were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor. SD trench segments 06-D29-00-2A, 06-D28-32-1M, -1N, and -1R contained 10-inch to 15-inch VCP. All VCP were disintegrated upon removal and transferred to the Basewide Radiological Contractor's RSY2 for processing along with excavated soil.

Two manholes (MH760 and MH764) were removed from Trench SU 268. MH760 and MH764 were removed on March 15, 2011, and March 14, 2011, respectively. An inadequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 268. Consequently, there are no sediment sample analytical results associated with Trench SU 268. The manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

7.3.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 268 remained in place following the completion of the removal action.

7.3.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 13, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 268 Project Report* (Shaw, 2012u; Appendix K), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 268 Project Report*. None of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Seventeen of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . Both samples reported total Sr as below the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 268 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 268 were 0.044 pCi/g for ^{137}Cs , 0.124 pCi/g for ^{90}Sr , and 0.407 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.041 pCi/g for ^{137}Cs , 0.154 pCi/g for ^{90}Sr , and 0.613 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 268 resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. The model of the trench surfaces for Trench SU 268 resulted in a maximum above-background dose of 0.6 mrem/yr and an ELCR of 8E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 268 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 268 Project Report* (Shaw, 2012u; Appendix K).

No further action is required, and unrestricted release is recommended for Trench SU 268 for the following reasons:

- All analytical results from systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the radiologically-screened excavated soil and imported backfill material were below the project release criteria.

- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 268 resulted in a maximum above-background dose of 0.3 mrem/yr and an ELCR of 4E-06. The model of the trench surfaces for Trench SU 268 resulted in a maximum above-background dose of 0.6 mrem/yr and an ELCR of 8E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 268 Project Report* (Shaw, 2012u; Appendix K) was issued in September 2012.

7.3.4 Backfill Activities

Excavated soil from ESUs 434, 444, and 456 were used in part to backfill Trench SU 268 with approximate volumes of 70 cy, 170 cy, and 20 cy, respectively, used from each ESU. The analytical data from the screening activities at ESUs 434, 444, and 456 are presented below in Tables 3-2, 3-3, and 3-4 of the *Final Survey Unit 268 Project Report* (Shaw, 2012u; Appendix K), respectively. Final data from the ESUs were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data packages prepared by TestAmerica St. Louis for ESUs 434, 444, and 456 are presented in Appendix C of the *Final Survey Unit 268 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 480 cy of imported fill material from the Jericho import fill source was also used to backfill Trench SU 268. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). As part of the GMP site restoration, a layer of 4-inch to 6-inch of crushed asphalt was placed on top of Trench SU 268 footprint.

7.4 Trench Survey Unit 269

Trench SU 269 included two trench segments, 06-D29-00-12A and 06-D29-00-13A, and a volume of excavated and imported fill material used for backfill. Trench SU 269 is located along the GMP as shown on Figure 5. The total excavated surface area was approximately 2,068 ft² (192 m²) with excavation depths varying between 5 and 6 feet bgs. Approximately 300 cy of soil were excavated from Trench SU 269.

7.4.1 Removal Action Activities

Excavation of Trench SU 269 commenced on March 10, 2011, in trench segment 06-D29-00-12A, and removal of the pipe and soil was completed on March 11, 2011. A total of 30 truckloads (approximately 300 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

Approximately 119 linear feet of pipe was removed from Trench SU 269 during excavation activities. Pipe was found in the trench between 4 to 5 feet bgs. SD trench segments 06-D29-00-12A and 06-D29-00-13A contained 8-inch diameter metal pipes. All metal pipe sections and concrete drain section were excavated out and placed on plastic sheeting pending further investigation. An adequate volume of sediment for sample collection and analysis was not available in the piping excavated from Trench SU 269. Consequently, there are no sediment sample analytical results associated with Trench SU 269. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor. No manhole was associated with Trench SU 269.

7.4.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 269 remained in place following the completion of the removal action.

7.4.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 12, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 269 Project Report* (Shaw, 2012v; Appendix K), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 269 Project Report*. None of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All of the 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were analyzed at the off-site laboratory for total Sr as a surrogate for ^{90}Sr . No results for total Sr were reported above the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 269 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 269 were 0.044 pCi/g for ^{137}Cs , 0.087 pCi/g for ^{90}Sr , and 0.402 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.044 pCi/g for ^{137}Cs , 0.155 pCi/g for ^{90}Sr , and 0.355 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used for Trench SU 269 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 269 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 269 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 269 Project Report* (Shaw, 2012v; Appendix K).

No further action is required, and unrestricted release is recommended for Trench SU 269 for the following reasons:

- All analytical results from systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the radiologically-screened excavated soil and imported backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used for Trench SU 269 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU 269 resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 269 Project Report* (Shaw, 2012v; Appendix K) was issued in September 2012.

7.4.4 Backfill Activities

Excavated soil from ESU 444 (40 cy) was used in part to backfill Trench SU 269. The analytical data from the screening activities at ESU 444 are presented in Table 3-2 of the *Final Survey Unit 269 Project Report* (Shaw, 2012v; Appendix K). Final data from ESU 444 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data package prepared by TestAmerica St. Louis for ESU 444 is presented in Appendix C of the *Final Survey Unit 269 Project Report*.

In addition to the radiologically-screened excavated soil, approximately 260 cy of imported fill material from Jericho import fill source was also used to backfill Trench SU 269. Import fill

sample information is presented in the SUPRA SSSD (TtEC, 2011b). As part of the GMP site restoration, a layer of 4-inch to 6-inch of crushed asphalt was placed on top of Trench SU 269 footprint.

7.5 Trench Survey Unit 275

Trench SU 275 included 11 trench segments, 06-D29-00-3A, -4A, -5A, -5B, -6A, -6B, -6C, -6D, -7A, -8A, and -16B and a volume of excavated and imported fill material used for backfill. Trench SU 275 encompassed five discrete dig sites on GMP as shown on Figure 5. The total excavated surface area was approximately 6,759 ft² (628 m²) with excavation depths varying between 1.5 and 6.9 feet bgs. Approximately 510 cy of soil were excavated from Trench SU 275.

7.5.1 Removal Action Activities

Excavation of Trench SU 275 commenced on March 16, 2011, in trench segment 06-D29-00-8A, and removal of the pipe and soil was completed on March 23, 2011. A total of 51 truckloads (approximately 510 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for processing.

During excavation of MH769, a previously unidentified SD line was found and designated as 06-D29-00-16B. Approximately 35 linear feet of this pipe segment was identified extending southwest from MH769 to pipe segment 06-D29-00-16A. In addition trench segments 06-D29-00-6A, -6C, and -7A were found to be approximately 11 feet, 20 feet, and 9 feet longer than indicated in the D-1 Sewer Design Plan (Shaw, 2010d), respectively.

Approximately 519 linear feet of pipe was removed from Trench SU 275 during excavation activities. Pipe was found in trench between 0.5 to 5.9 feet bgs. SD trench segments 06-D29-00-3A, -4A, -5A, -5B, -6A, -6B, -6D, and -16B contained 8-inch diameter metal pipes. SD trench segments 06-D29-00-6C, -7A, and -8A contained 3-inch diameter metal pipe. All metal pipe sections were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Six manholes (MH766 to MH771) were removed from Trench SU 268 between March 16, 2011, and March 21, 2011 (Table 9). Sufficient sediment for sample collection and analysis was found in MH766, MH768, and MH769 (Table 8). The analytical results for the sediment samples collected from MH766, MH768, and MH769 did not indicate the presence of radioactivity above the release criteria for any ROC. The sediment sample analytical reports are provided in Appendix M. The manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

7.5.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 275 remained in place following the completion of the removal action.

7.5.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). Final systematic samples were collected from 18 locations on April 13, 2011, and submitted to the HPNS on-site radiological laboratory for analysis.

The systematic sampling results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 275 Project Report* (Shaw, 2012ab; Appendix K), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 275 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels greater than the MDL; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Two of the 18 systematic samples were sent off site for total Sr as a surrogate for ^{90}Sr analysis. Both samples reported as below the MDL; therefore, no results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 275 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 275 were 0.040 pCi/g for ^{137}Cs , 0.118 pCi/g for ^{90}Sr , and 0.518 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.041 pCi/g for ^{137}Cs , 0.132 pCi/g for ^{90}Sr , and 0.434 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 275 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. The model of Trench SU 275 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 6E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 275 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 275 Project Report* (Shaw, 2012ab; Appendix K).

No further action is required, and unrestricted release is recommended for Trench SU 275 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Radiologically-screened excavated soil and imported backfill material met the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at Trench SU 275 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. The model of Trench SU 275 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 6E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 275 Project Report* (Shaw, 2012ab; Appendix K) was issued in September 2012.

7.5.4 Backfill Activities

ESUs 430, 453, and 456 were used in part to backfill Trench SU 275. Final data from ESUs 430, 453, and 456 were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data from the screening activities at ESUs 430, 453, and 456 are summarized in Tables 3-2 through 3-4 of the *Final Survey Unit 275 Project Report* (Shaw, 2012ab; Appendix K). The analytical data packages prepared by TestAmerica St. Louis for ESUs 430, 453, and 456 are presented in Appendix C of the *Final Survey Unit 275 Project Report*.

Approximately 160 cy of imported fill material from the Jericho import fill source was also used to backfill Trench SU 275. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). As part of the GMP site restoration, a layer of 4-inch to 6-inch of crushed asphalt was placed on top of Trench SU 269 footprint.

8.0 Work Area 30

WA 30 is located at the northeastern end of Parcel D-1, consists of the whole South Pier (Figure 2). It is bounded on the northwest by WA 24, and north, east, and south by Parcel F and the Bay. The radiological work activities performed for WA 30 included Trench SUs 260 and 263. The following sections summarize the work activities completed in WA 30 to support the recommended radiological release for unrestricted use of the Parcel D-1 property.

8.1 Trench Survey Unit 260

Trench SU 260 included trench segments 06-D30-00-1A, -4A, and -5A and backfill soil. The location of Trench SU 260 is shown on Figure 5. The total excavated surface area was approximately 2,203 ft² (205 m²) with excavation depths varying between 2.5 and 6 feet bgs. Approximately 280 cy of material were excavated from Trench SU 260.

8.1.1 Removal Action Activities

Excavation of SU 260 commenced on October 19, 2010, at MH725, and removal of the pipe, manhole, and soil was completed on October 26, 2010. SD trench segment 06-D30-00-5A was not identified in the D-1 Sewer Design Plan (Shaw, 2010d), but was discovered running between MH721 and MH722. As measured in the field, 10 linear feet of trench segment 06-D30-00-5A was removed during excavation activities. A total of 28 truckloads (approximately 280 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for process.

Approximately 99 linear feet of pipe was removed from Trench SU 260 during excavation activities. Pipe was found in trench between 1.5 to 6 feet bgs. Trench segments 06-D3-00-1A, -4A, and -5A contained 4-inch diameter steel pipes. All pipe sections were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Eleven manholes were associated with Trench SU 260 (MH715 to MH719 and MH721 to MH726) (Table 9). The manholes were removed between October 18 and October 21, 2010. An inadequate volume of sediment for sample collection and analysis was not available in the piping and manholes excavated from Trench SU 260. Consequently, there are no sediment sample analytical results associated with Trench SU 260. The manholes were surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

The original systematic sampling screening results for the project ROCs are summarized in Table 3-1 of the *Final Survey Unit 260 Project Report* (Shaw, 2012m; Appendix L), and

analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 260 Project Report*. None of the screening results reported ^{137}Cs levels greater than the MDA; therefore, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). Twelve of 18 systematic samples reported ^{226}Ra levels greater than the MDA with one sample (06-PD1-SP-260-016) exceeding the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 18 systematic samples were analyzed off site for total Sr as a surrogate for ^{90}Sr . None of the samples reported results above their respective MDLs); therefore, none of the results exceeded the project release criterion for ^{90}Sr (0.331 pCi/g).

Gamma scanning measurements were collected from 100 percent of accessible surfaces within the SU 260 excavation using a 2-inch by 2-inch NaI gamma scintillation detector coupled with a Ludlum 2221 ratemeter/scaler and Trimble GPS/data logger. Following data collection, scanning data were reviewed for completeness and to identify any elevated areas. Four locations were selected to further investigate potentially anomalous measurements (discussed further in Appendix B) by biased static measurements and sampling. Four additional biased samples (06-PD1T-260-019 through 06-PD1T-260-022) were collected, and all screening results were below project release criteria as shown in Table 3-2 of the *Final Survey Unit 260 Project Report* (Shaw, 2012m; Appendix L). A summary of gamma scanning data is presented in Appendix B of the *Final Survey Unit 260 Project Report*.

Remedial activities were performed over an approximate 125 ft² area that encompassed the area represented by sample 06-PD1-SP-260-016. Soil was removed to a depth of 0.5 foot below the trench surface, resulting in the removal of approximately 2.3 cy of material that was transferred to the Navy's LLRW contractor for disposition. Five post-remediation samples (06-PD1T-260-023 to 06-PD1T-260-027) were collected at the original location of sample 06-PD1-SP-260-016 and the four corners of the remediated area, and all results were below project release criteria as shown in Table 3-3 of the *Final Survey Unit 260 Project Report* (Shaw, 2012m; Appendix L). Five post-remediation static gamma measurements were collected at the original sample location and at four locations along the corners of the additional excavation, and all results were below project investigation levels (Appendix B of the *Final Survey Unit 260 Project Report*).

8.1.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 260 remained in place following the completion of the removal action.

8.1.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate “as-built” drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010). The final systematic sampling results for the project ROCs are summarized in Table 3-4 of the *Final Survey Unit 260 Project Report* (Shaw, 2012m; Appendix L). One of the 18 final systematic samples reported ^{137}Cs levels greater than the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Three of the 18 final systematic samples were analyzed off site for total Sr as surrogate for ^{90}Sr . None of the results for total Sr exceeded the MDL; therefore, no results exceeded the project release criteria for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 260 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 260 were 0.042 pCi/g for ^{137}Cs , 0.137 pCi/g for ^{90}Sr , and 0.521 pCi/g for ^{226}Ra . The trench unit average net residual radioactivity concentrations were 0.040 pCi/g for ^{137}Cs , 0.151 pCi/g for ^{90}Sr , and 0.601 pCi/g for ^{226}Ra . The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at SU 260 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 260 Project Report* (Shaw, 2012m; Appendix L).

No further action is required, and unrestricted release is recommended for Trench SU 260 for the following reasons:

- All analytical results from final systematic samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.

- Analytical results from the radiologically-screened excavated soil and imported backfill material were below project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at Trench SU 260 resulted in a maximum above-background dose of 0.1 mrem/yr and an ELCR of 1E-06. The model of Trench SU resulted in a maximum above-background dose of 0.2 mrem/yr and an ELCR of 3E-06. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 260 Project Report* (Shaw, 2012m; Appendix L) was issued in September 2012.

8.1.4 Backfill Activities

Approximately 280 cy of imported fill material from the Jericho import fill source was used to backfill Trench SU 260. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were laid on top of Trench SU 260 footprint as part of South Pier site restoration.

8.2 Trench Survey Unit 263

Trench SU 263 included trench segments 06-D30-00-6A, 06-D30-00-6B, 06-D30-00-6C, 06-D30-00-2A, 06-D30-00-2B, 06-D30-00-2C, 06-D30-00-2D, and 06-D30-00-3A and a volume of Navy-approved excavated and imported soil used for backfill. The location of Trench SU 263 is shown on Figure 5. Trench SU 263 consists of several trenches and excavations on South Pier in Parcel D-1. The combined excavation footprints comprising Trench Unit 263 were approximately 750 feet in length (229 meters). The total excavated surface area was approximately 5,889 ft² (547 m²) with excavation depths varying between 1.5 and 5 feet bgs. Approximately 230 cy of material were excavated from Trench SU 263.

8.2.1 Removal Action Activities

Excavation of Trench SU 263 commenced on October 22, 2010, at trench segment 06-D30-00-2A, and removal of the pipe, manhole, and soil was completed on January 18, 2011. SD trench segment 06-D30-00-6A, -6B, and -6C were not identified in the D-1 Sewer Design Plan (Shaw, 2010d). As measured in the field, 625, 52, and 56 linear feet of trench segments 06-D30-00-6A, -6B, and -6C were removed during excavation activities, respectively. A total of 23 truckloads (approximately 230 cy) of overburden soil and peripheral material were excavated and transferred to the Basewide Radiological Contractor's RSY2 for process.

Approximately 928 linear feet of pipe was removed from Trench SU 263. Pipe was found in trench between 0.5 to 4 feet bgs. SS trench segments 06-D30-00-6A contained 4-inch PVC pipe. SS trench segments 06-D30-00-6B and -6C contained 4-inch diameter metal pipes. SD trench segments 06-D30-00-2A, -2B, -2C, -2D, and -3A contain 1.5-inch to 4-inch metal pipes. All pipe sections were excavated out and placed on plastic sheeting pending further investigation. Following radiological screening, the pipe sections were subsequently placed in LLRW bins for disposal by the Navy's LLRW contractor.

Four manholes were excavated and removed from Trench SU 263 (MH720, MH734, MH740, and MH741). Manhole MH720 was removed on January 6, 2011, and the remaining three manholes (MH734, MH740, and MH741) were removed on January 18, 2011. An inadequate volume of sediment for sample collection and analysis was not available in the piping and manholes excavated from Trench SU 263. Consequently, there are no sediment sample analytical results associated with Trench SU 263. All four manholes were radiologically surveyed and released for disposal as general concrete debris by the Navy T&D contractor (Table 9).

8.2.2 Piping Remaining in Place

No known SD or SS piping associated with Trench SU 263 remained in place following the completion of the removal action.

8.2.3 Final Status Survey Summary

Following excavation, topographic surveys were performed to generate "as-built" drawings of the trenches that were used as the basis for the sampling design created with *Visual Sample Plan, Version 6.0* (PNNL, 2010).

The final systematic sampling results are summarized for the project ROCs in Table 3-1 of the *Final Survey Unit 263 Project Report* (Shaw, 2012p; Appendix L), and analytical data packages received from the on-site and off-site laboratories are presented in Appendix A of the *Final Survey Unit 263 Project Report*. One of the 18 systematic samples reported ^{137}Cs levels equal to the MDL; however, no results exceeded the project release criterion for ^{137}Cs (0.113 pCi/g). All 18 systematic samples reported ^{226}Ra levels greater than the MDL; however, no results exceeded the project release criterion for ^{226}Ra (1.485 pCi/g).

Four of the 18 systematic samples were analyzed to the off-site laboratory for total Sr as a surrogate for ^{90}Sr ; one sample reported total Sr levels equal to the MDL; however, the result did not exceed the project release criterion for ^{90}Sr (0.331 pCi/g).

For the FSS, Trench SU 263 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. As directed by the Navy and based on discussions with

the DTSC and CDPH, input parameters using the larger of the MDL or reported activity were applied for the dose modeling efforts. The average net residual radioactivity concentrations for material used as backfill in Trench SU 263 were 0.045 pCi/g for ¹³⁷Cs, 0.185 pCi/g for ⁹⁰Sr, and 0.447 pCi/g for ²²⁶Ra. The trench unit average net residual radioactivity concentrations were 0.044 pCi/g for ¹³⁷Cs, 0.173 pCi/g for ⁹⁰Sr, and 0.730 pCi/g for ²²⁶Ra. The activity used to model each radionuclide was based on the isotopic net concentration.

The model of the backfill material used at Trench SU 263 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. The model of Trench SU 263 resulted in a maximum above-background dose of 1.8 mrem/yr and an ELCR of 3E-05. These results meet the project dose and risk criteria and as such, no additional dose modeling was required. The RESRAD (ANL, 2009) output files for the two Trench SU 263 dose calculations are presented in Appendix D and are summarized in Table 6-2 of the *Final Survey Unit 263 Project Report* (Shaw, 2012p; Appendix L).

No further action is required, and unrestricted release is recommended for Trench SU 263 for the following reasons:

- All analytical results from systematic and biased samples collected from the trench were below project release criteria.
- Gamma scanning was performed on 100 percent of accessible surfaces within the trench, and no discrete sources were found. All potential scanning anomalies were investigated and found to represent variability in background.
- Analytical results from the radiologically-screened excavated soil and imported backfill material were below the project release criteria.
- Qualitative ALARA criteria described in the SUPRA SSSD (TtEC, 2011b) have been met.
- The model of the backfill material used at Trench SU 263 resulted in a maximum above-background dose of 0.4 mrem/yr and an ELCR of 5E-06. The model of Trench SU 263 resulted in a maximum above-background dose of 1.8 mrem/yr and an ELCR of 3E-05. Dose and risk modeling demonstrated that the residual dose and risk under a conservative exposure scenario are below the project dose limit of 15 mrem/yr and ELCR of 3E-04.

The *Final Survey Unit 263 Project Report* (Shaw, 2012p; Appendix L) was issued in September 2012.

8.2.4 Backfill Activities

Excavated soil from ESU 374 (160 cy) was used in part to backfill Trench SU 263. The analytical data from soil clearance activities at ESU 374 are presented below in Table 3-2 of the

Final Survey Unit 263 Project Report (Shaw, 2012p; Appendix L). Final data from the ESUs were provided by TestAmerica St. Louis, per the SUPRA SSSD (TtEC, 2011b). The analytical data package provided by TestAmerica St. Louis for ESU 374 is presented in Appendix C of the *Final Survey Unit 263 Project Report*.

Approximately 70 cy of imported fill material from the Jericho import fill source was also used to backfill Trench SU 263. Import fill sample information is presented in the SUPRA SSSD (TtEC, 2011b). In addition, 4 to 6 inches of crushed asphalt were laid on top of Trench SU 263 footprint as part of South Pier site restoration. Further discussions on the site restoration effort can be found in Section 9.0.

8.3 South Pier

The following sections summarize the radiological work performed for the South Pier, provide an abbreviated history, identify the FSS results, and discuss regulatory concurrence for unrestricted radiological release. The *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013a; Appendix L) details the radiological survey activities. The location of the GMP is shown on Figures 2 and 5.

8.3.1 Description and Background

The South Pier Area (South Pier) is located to the north of GMP in WA 30 within Parcel D-1 (Figure 2). South Pier is located south of North Pier, which is part of Parcel C at HPNS. The HRA (NAVSEA, 2004) did not specifically identify the South Pier as a separate radiologically impacted area; however, the land portions of the berths associated with South Pier (Berths 10 through 13) are considered radiologically impacted. Release of SD and SSs associated with South Pier was addressed in the separate SUPRs for Trench SUs 260 and 263 (Shaw, 2012m and 2012p; Appendix L).

South Pier is approximately 120 feet wide by 1,000 feet long (Figure 2). At project startup, Building 311 was the only building on South Pier. The building was a wood-framed, two-story building that was approximately 100 feet long and 40 feet wide, and was not radiologically impacted. Building 311 was demolished as part of the scope of work. South Pier is constructed of concrete-reinforced wood cofferdams that were floated into place and filled with rock and dredge spoils. Remaining structures present on South Pier include the Building 311 foundation, the outer pier wall and utility access hoods, a subgrade utility pipe chase, and miscellaneous electrical service pad or vaults (all constructed of concrete). The land portions of Berths 10 through 13 (considered to be the 50 feet of land adjacent to water's edge) were addressed by this work.

The HRA (NAVSEA, 2004) has limited information specifically about South Pier. The HRA noted that Building 311 was used as a latrine, site superintendent's office, and administration

building as early as 1945. Construction dates for South Pier or Building 311 are not available. No historical radiological activities are known to have occurred in Building 311.

Berths 10 through 13 were identified as potentially radiologically impacted in the HRA in the discussion of Parcel F. Radiological impacts to the berths may have resulted from berthing of Operations Crossroads ships, berthing of the YGN-73 (LLRW disposal barge), and usage by the NRDL (berthing of experimental barges and YAGs-39 and -40).

Preparation of the South Pier for FSS included the demolition of Building 311, the removal of surface covering asphalt, the removal of the crane and train steel rails, the removal of the wood rail ties, and the removal of the SD/SS lines. Demolition of Building 311 included the pre-demolition performance of lead-based paint and asbestos abatement following pre-existing building characterization survey data. The material removed during abatement of the building surfaces were dispositioned as nonmixed waste as the building structures were not characterized as radiologically impacted. The building material generated from the structural demolition was disposed of as demolition debris.

The removed asphalt from each designated SU was separately staged in a lay down area adjacent to the South Pier pending the review of the *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013a; Appendix L) ground survey and sampling data. Following the review of the ground surface FSS survey and sampling data, the removed asphalt (4,399 tons) from the South Pier was crushed and reused as ground cover on the South Pier (Section 9.2 of the *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California*).

The removed steel crane and train rails were also staged in a lay down area adjacent to the South Pier. All steel crane and train rails were surveyed. All accessible surfaces of the steel crane and train rails were surveyed for fixed and removable surface contamination. No measurements exceeding the project surface contamination criteria were identified (Table 2).

The wood rail ties were initially removed and prepared for disposition as LLRW. Following additional post-removal reviews in coordination with the Navy, the wood rail ties were staged adjacent to the South Pier pending future release surveys.

The final ROCs for South Pier are ^{137}Cs , plutonium-239 (^{239}Pu), ^{226}Ra , and ^{90}Sr . Table 2-1 of the *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013a; Appendix L) lists the ROCs with the corresponding half-lives and principal types of radiation.

8.3.2 Final Status Survey Summary

South Pier was prepared for survey in late 2010 and the debris was radiologically surveyed and cleared as appropriate. The site was partitioned into 12 Class 1 SUs and a Class 2 SU with an area extending out as a 15 ft buffer zone on the landward side of the pier. A 100 percent scan for gamma emitters was performed in the Class 1 SU, and a 50 percent scan for gamma emitters was performed in the Class 2 SU to identify small areas of elevated activity; none were found. A minimum of 20 systematic samples were collected from each SU and analyzed at the on-site (initial screening) and off-site (final results) laboratories. Limited soil remediation was required in 7 of the original 13 South Pier SU due to elevated ^{137}Cs or ^{226}Ra results. An additional Class 2 buffer SU was established to further bound pier soil. Remediations were performed on South Pier until all FSS samples were below the project release criteria.

Surveys for fixed and removable surface contamination were performed on all remaining South Pier concrete infrastructure, including the pier walls; utility hoods; electrical pads, vaults, and corridors; and other miscellaneous items. The utility corridor surveys for Utility Corridor SEC01 were performed following a WV (WV#6) to the *Final, Final Task-Specific Plan Addendum, South Pier Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California* (Shaw, 2012a), due to the presence of deteriorate ACM within the corridor. A total of 32 concrete pads and vaults, 39 utility hoods, 9 pier wall segments, and the South Pier utility corridor were surveyed and no measurements exceeding the project surface contamination criteria were identified.

Surveys on South Pier were completed in October 2012.

The scoping survey was designed to meet the data quality requirements of an FSS. Since there were no small areas of elevated activity requiring remediation identified in the final round of sampling, the scoping and characterization survey results were utilized in place of an FSS.

No further action is required and unrestricted release is recommended for South Pier based on the following reasons:

- All analytical results for ^{226}Ra , ^{137}Cs , and total Sr from final systematic samples collected from the South Pier and buffer area were below project release criteria.
- Impacted soil areas with elevated sampling results were sufficiently bounded and remediated, as demonstrated in the *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013a; Appendix L).
- Gamma scanning was performed on 100 percent of South Pier SUs and discrete sources were not found. All potential scanning anomalies were investigated and found to represent variability in background.

- Surface contamination surveys were performed on all remaining South Pier infrastructure and all survey results were below project surface contamination criteria.
- Qualitative ALARA criteria were met.
- Dose and risk modeling performed for the South Pier SUs resulted in a maximum above-background dose of 2.879 mrem/yr and ELCR of 4.427E-05, from SU SP05. This dose and risk modeling demonstrated that the residual dose and risk, under a conservative exposure scenario, were well below the project dose limit of 15 mrem/yr and ELCR of 3E-04 and therefore meet project requirements for unrestricted release.

8.3.3 Regulatory Concurrence

The *Final, Final Status Survey Report, South Pier Area, Hunters Point Naval Shipyard, San Francisco, California* (Shaw E&I, 2013a; Appendix L) was submitted to the regulatory agencies in June 2013. Concurrence by the regulatory agencies for radiological release for unrestricted use of the South Pier is pending.

9.0 *Site Restoration and Post-Construction Activities*

This section describes the site restoration and post-construction activities at Parcel D-1. Site restoration consisted primarily of backfilling trenches with earthen fills, compacting and matching of grades, and placement of crushed asphalt. Additional restoration included swale construction and general demobilization activities.

9.1 *Backfilling and Compacting*

The excavation trenches were backfilled when the results of the surveys and sampling confirmed that contamination above the release criteria was removed and concurrence from RASO was obtained. Trenches were backfilled with soil materials from one of the following two sources:

- Soil screened and cleared by the Basewide Radiological Contractor on their RSY pads and subsequently meeting radiological release criteria. The soil was accepted upon receipt of written RASO approval. The majority of backfill consisted of this soil.
- Approved on-base import fill from the stockpile located southeast of Building 600 in Parcel E. This pre-approved “Jericho” soil was dedicated for use as SD and SS trench backfill.

Only soil that met the criteria specified in the SAP was reused as backfill material. Soil that did not meet the specified criteria was disposed of by the Navy T&D contractor. Soil that was excavated during SD and SS removals and accepted for reuse by RASO was used as backfill in the same general area of Parcel D-1 from which it was excavated. Cleared soil excavated from a trench run located within an IR site was returned to a trench within the same IR site.

Backfill and compaction requirements were performed consistent with the specification provided in the D-1 Sewer Design Plan (Shaw, 2010d). Backfill was placed to the piping and grades as specified in the D-1 Sewer Design Plan to assure surface drainage. A final topographic survey was not performed upon backfill placement due to additional post-remediation activities to be performed, including final placement of crushed asphalt and eventually a durable cover under a separate Navy contract. When possible, trenches were backfilled to the original grade noted prior to excavation. Areas where a new drainage swale was installed were backfilled to the level indicated in the associated Design Drawings (Shaw, 2010f and 2010g) (Section 9.3).

9.2 *Asphalt Placement*

The final step of site restoration was placement of asphalt that was removed during the removal action, radiologically cleared, and crushed. Upon removal and survey the asphalt was crushed on site making it suitable for reuse (WV #4). Approximately 290 tons (approximately 176 cy) of asphalt originating from GMP SU 26 was disposed of as LLRW. The residual volume

(approximately 25,856 tons; 15,670 cy) was crushed on site. The asphalt was then placed on South Pier and GMP and rolled to an approximate final thickness of 4 inches. Asphalt was placed and rolled up to the edge of remaining concrete pads and utility corridors not to cover pier features.

9.3 Temporary Swale Construction

In most areas of the sections of Parcel D-1 addressed during this removal action, post-backfill site restoration, in addition to asphalt placement, was limited to installing surface drainage swales to direct overland stormwater runoff to outfalls along the Bay shoreline, consistent with recent or planned grading along the boundary with Parcel G (Figure 6). No SD or SS piping was replaced.

Temporary stormwater swales capable of handling a two year return period storm were installed by grading (Appendix C). The swale system was installed to handle rainfall that enters portions of Parcel D-1 that drains towards the outfall at Berth 15, as well as runoff from HPNS Parcel G. The stormwater swale tied into remaining SD lines, the Bay SD outfalls, and other stormwater swales constructed by other contractors in Parcel G. The outfall structures themselves were not modified. Sediments and erosion controls were installed using BMPs as stated in SWPPP in the D-1 Execution Plan (Shaw, 2010a).

9.4 Demobilization

Once site restoration of Parcel D-1 was complete, demobilization activities were initiated. Demobilization included the radiological release surveys of construction equipment and materials, cleaning of the project site, performance of a final radiological surface survey of disturbed areas, and issuing a completion inspection checklist (Appendix E).

Prior to removing equipment and materials from Parcel D-1, radiological release surveys were completed. Radiological surveys consisting of a 100 percent scan of accessible areas for alpha/beta contamination were conducted. Radioactive contamination above the established criteria, defined in Table 2, was not detected within the work area during the work process or on any of the equipment and materials evaluated during the removal of equipment or materials from this area. Decontamination for radioactive contamination was therefore not required.

Demobilization at Parcel D-1 also included site cleaning activities. Site cleaning consisted of repairing erosion or runoff-related damage; grading areas used for construction, and removing excess construction material, wood, debris, and other foreign material from the site. Remaining trash, wood, and debris were collected and segregated by type for proper off-site disposal.

Following the removal of trash and debris, the ground surface within unexcavated areas at Parcel D-1, including lay down areas, was surveyed for gamma-emitting radionuclides. Data

obtained from the pre-mobilization initial radiological surface scan survey and the demobilization scan survey were compared with the instrument-specific investigation levels to ensure that radioactive materials were not relocated or additional radioactive contamination had not been introduced to the site. The evaluation of scan survey data satisfactory established that radioactive materials or contamination were not relocated or introduced during the work area excavation activities.

Demobilization was completed on December 3, 2012.

9.5 Work Variances

To provide for safer conduct in the field, improve production, and meet the unexpected changes in site conditions, the WV process was used to address unforeseen circumstances during the field implementation of this radiological removal action. A WV is used to document a change to the “as designed condition” and request or suggest a solution. The WV process requires that requested changes to the project design specifications or plans be reviewed and approved by multiple Shaw E&I technical specialists and the Navy prior to implementation. During this radiological removal action, a total of six WV documents were prepared. WVs relating to radiological materials and protocols were pre-approved by the Navy and RASO before implementation. Copies of the WVs are provided in Appendix D.

9.6 Completion Inspections

Completion inspections were performed as summarized in this section. Appendix E contains documentation for the completion inspections performed at the Parcel D-1 areas that fall under this radiological removal action.

9.6.1 Pre-Final Inspection

A pre-final inspection was performed by the ROICC and CSO on November 13, 2012. The Shaw Project Quality Control Manager (PQCM), Construction Manager, Project Manager, RCS, and Field Engineer were also present during the scheduled inspection. The pre-final inspection included a site visit at which time the work completed under the CTO was reviewed. At the pre-final inspection, the ROICC developed a punch list of incomplete work items requiring completion under the project contract and provided the list to the PQCM. Punch list items identified by the ROICC included the following:

- Removing remaining support items (i.e., fence panels)
- Removing a half-buried cable from the area
- Painting protruding rebar a bright color
- Providing a barrier around the “sandy” area

- Cutting and removing a metal strap protruding from the ground
- Relocating remaining tires in WA 24 to the Parcel G staging pile
- Identifying and properly managing a 55-gallon drum located in WA 24

Appendix E contains the pre-final inspection punch list documentation developed by the ROICC during the inspection.

9.6.2 Final Inspection

The purpose of the final acceptance inspection was to verify that specific items previously identified as incomplete or unacceptable during the pre-final inspection were completed and acceptable. The final acceptance inspection included verification by the PQCM that punch list items identified during the pre-final acceptance inspection were completed as discussed. Punch list items from the pre-final inspection included removing remaining support items, ensuring site trip hazards were removed or well marked, and managing remaining waste items. These punch list items were verified as complete and acceptable by the PQCM on November 20, 2012. Appendix E contains final acceptance inspection documentation.

9.7 Photographic Log

The work performed during the Parcel D-1 radiological activities was documented using a photographic record. Photographs of typical operations, processes, and procedures during the Parcel D-1 radiological fieldwork are provided in Appendix F.

10.0 Community Relations

This section describes information provided to the public and public participation with regards to this project.

10.1 Public Information

The remediation process was conducted in accordance with the *Final Community Involvement Plan, Hunters Point Shipyard, San Francisco, California* (Navy, 2011) prepared for HPNS to facilitate public involvement in the decision-making process. The AM (Navy, 2006), planning documents, this Radiological RACR, and other documentation associated with remediation activities at HPNS are contained in the Environmental Restoration Program Record File for the site. The Environmental Restoration Program Record File index is maintained by Naval Facilities Engineering Command Southwest. The Navy, as lead agency with state agency concurrence, has overall responsibility for public participation activities. As such, the planning documents, this Radiological RACR, and other information concerning Parcel D-1 are also available to the public at the Information Repository. The public Information Repository where the public can review any of the documents associated with the Environmental Restoration Program Record File are:

HPNS Site Office Trailer (Across the street from the security entrance to the Shipyard) 690 Hudson Avenue San Francisco, California 94124	City of San Francisco Main Library, Government Information Center, 5 th Floor 100 Larkin Street San Francisco, California 94102 415.557.4500
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10.2 Public Participation

To encourage local participation in the hazardous waste cleanup program at HPNS, the Navy hosts community meetings. The meetings include presentations of on-going cleanup work at HPNS to inform the public.

The Navy hosted one meeting at the Bayview YMCA to present and discuss the HPNS Parcel D-1 Radiological Remediation and Support activities.

- Community Technical Meeting—Radiological Remediation and Support, September 16, 2010

11.0 Removal Action Costs

This section provides a summary of the estimated costs incurred in performing the radiological survey and remediation at Parcel D-1 as reported in this Radiological RACR. The cost of this removal action is approximate due to other Navy contractors performing portions of the removal action activities, such as radiological soil processing, radiological sample analysis, and off-site T&D.

Radiological Removal Action Costs	
Activity	Cost
Nonconstruction	
Project Management and Meetings	\$1,576,100
Planning Documents	\$415,700
Radiological RACR, SUPRs, and FSS Reports	\$244,600
<i>Subtotal Nonconstruction Costs</i>	<i>\$2,236,400</i>
Construction¹	
Project Infrastructure and Site Management	\$3,108,800
Mobilization/Site Preparation	\$327,600
Demolition of Buildings	\$352,800
Radiological Surveys of GMP; South Pier; Building 274; Former Building 313, 313A, and 322 Sites; and Building 383 Area	\$3,204,300
SD and SS Removal	\$1,641,300
Air Monitoring	\$248,700
T&D of Waste (LLRW)	\$154,000 ²
Site Restoration	\$924,100
Housekeeping and Demobilization	\$72,100
<i>Subtotal Construction Costs</i>	<i>\$10,033,700</i>
Estimated Total Costs	\$12,270,100

Notes:

¹ Not including costs associated with on-site or off-site analytical tests performed by the Basewide Radiological Contractor.

² Not including LLRW and non-LLRW processed by the Basewide Radiological Contractor and the non-LLRW Navy T&D Contractor to avoid double-counting of waste costs reported in other Radiological RACRs and/or reports.

12.0 Conclusions and Recommendations

Conclusions and recommendations of this Radiological RACR are discussed in the following subsections.

12.1 Radiologically Impacted Buildings/Structures and Former Building Sites

Radiological surveys of buildings and ground surfaces were performed in accordance the D-1 Radiological Work Plan (Shaw, 2010b). Parcel D-1 WA boundaries, impacted building, impacted building area, and the former building sites are shown on Figure 2. Radiological surveys were performed at the following sites:

- Building 274
- Building 383 Area footprint
- Former Building 313, 313A, and 322 Sites
- GMP
- South Pier

The purpose of the radiological surveys and removals was to achieve free-release of the radiologically impacted sites. Procedures for radiological surveys were performed in accordance with the D-1 Radiological Work Plan (Shaw, 2010b). FSSs were performed by Shaw E&I consistent with MARSSIM (DoD, et al, 2000). Results of the FSSs are summarized in Sections 4.0, 6.0, and 8.0, and the FSS reports are indexed in Appendices H, J, and L of this Radiological RACR.

Following radiological surveys and remediation, modeling was performed for each of the five impacted sites to calculate the residual doses to the critical group. The results of models each met the project dose and risk criteria of a 15 mrem/yr limit and an ELCR for less than 3E-04.

No evidence of residual radioactivity above the release criteria was found to be present at Building 274 and the Building 383 Area footprint. Sampling results above the project release criteria were observed for portions of the Former Building 313, 313A, and 322 Site, the GMP, and the South Pier. All areas were remediated, and all final sample results were either below the project release criteria or met project dose and risk limits. Based on the survey results and modeling efforts, the sites were recommended for unrestricted radiological release. The work objective to achieve unrestricted free-release of all areas and features identified within Parcel D-1 as radiologically impacted by the HRA and CTO 0006 was met.

12.2 Storm Drain and Sanitary Sewer Systems Removal

Removal of the SD and SS system was performed to achieve free-release of the specific areas address under this Parcel D-1 radiological removal action. Excavation of the SD and SS system commenced on October 8, 2010. Thirty-four trenches were excavated and a total of 12,957 linear feet of piping and 86 manholes pipes were removed during the removal activities at Parcel D-1. Although not identified on the Design Drawings (Shaw, 2010f and 2010g), an additional 3,114 linear feet of SD and SS piping and 15 manholes were discovered during the excavation activities and removed in accordance with the D-1 Sewer Work Plan (Shaw, 2010c). Soil excavated from the trenches was transferred to the Navy's Basewide Radiological Contractor for processing. Approximately 18,320 cy of soil was excavated, transferred, and processed.

The Parcel D-1 SD and SS pipes and manholes (collectively called piping) were removed during excavation of the trenches. The majority of the piping was crushed or disintegrated during the removal activities and the debris was transferred along with the surrounding soil to the RSYs for radiological processing. SD and SS piping that was not crushed or crumbled during excavation activities were placed on plastic sheeting pending further investigation and sampling. In total, 86 manholes and 12,957 linear feet of pipe were removed and staged during the Parcel D-1 removal activities. Radiological surveys were performed on the piping and if present, sediments were sampled for ROCs. Piping with elevated radioactivity were segregated and disposed as LLRW.

Following excavation, an FSS was performed in each trench. As part of the FSS, dose and risk modeling was performed for each of the 34 trench SUs. For dose and risk modeling efforts, SD and SS systems trench SUs were composed of two different types: trenches and backfill material. The results of the modeling efforts for each of the 34 designated trench SUs in Parcel D-1 fall within the acceptable NCP risk management range of $10E-6$ to $10E-4$, which supports radiological free-release. Based on the dose and risk modeling results, the highest net dose to workers or members of the public as a result of exposures to residual radioactive material in soil on Parcel D-1 was identified in Trench SU 263 at 1.733 mrem/yr with an ELCR of $2.8E-05$.

The excavated trenches were backfilled when the results of the surveys and sampling confirmed that contamination above the release criteria was removed and concurrence from RASO was obtained. Trenches were backfilled with soil materials from one of the following two sources:

- Soil screened and cleared by the Basewide Radiological Contractor on their RSY pads and subsequently meeting radiological release criteria. The soil was accepted upon receipt of written RASO approval. The majority of backfill consisted of this soil.
- Approved on-base import fill from the stockpile located southeast of Building 600 in Parcel E. This pre-approved "Jericho" soil was dedicated for use as SD and SS trench backfill.

Backfill and compaction requirements were performed consistent with the specification provided in the D-1 Sewer Design Plan (Shaw, 2010d). Backfill was placed to the piping and grades as specified in the D-1 Sewer Design Plan to assure surface drainage. A final topographic survey was not performed. When possible, trenches were backfilled to the original grade noted prior to excavation.

In most areas of the sections of Parcel D-1 addressed during this removal action, post-backfill site restoration (in addition to reused crushed asphalt placement) was limited to installing surface drainage swales to direct overland stormwater runoff to outfalls along the Bay shoreline, consistent with recent or planned grading along the boundary with Parcel G. Areas where a new drainage swale was installed were backfilled to the level indicated in the associated Design Drawings (Shaw, 2010f and 2010g). No SD or SS piping was replaced. Temporary stormwater swales capable of handling a two year return period storm were installed by grading (Appendix C). The swale system was installed to handle rainfall that enters portions of Parcel D-1 that drains towards the outfall at Berth 15, as well as runoff from HPNS Parcel G. The stormwater swale tied into remaining SD lines, the Bay SD outfalls, and other stormwater swales constructed by other contractors in Parcel G. The outfall structures themselves were not modified. Sediments and erosion controls were installed using BMPs as stated in SWPPP (Shaw, 2010a).

In conclusion, the entire SD and SS system was removed from the Parcel D-1 areas addressed during this removal action (Figure 2). Dose and risk modeling results for each of the 34 trench SUs are within the acceptable NCP risk management range of $10E-6$ to $10E-4$, which supports radiological free-release. Based on the survey results and modeling efforts, the SD and SS system was recommended for unrestricted radiological release. The work objective to achieve unrestricted free-release of all areas and features identified within areas of this Parcel D-1 removal action, as radiologically impacted by the HRA and CTO 0006, was met.

12.3 Recommendations

Process radiological free-release for the following areas and sites included in the Parcel D-1 Phase 1 removal activities:

- Building 274
- Building 383 Area footprint
- Former Building 313, 313A, and 322 Sites
- GMP
- South Pier

- SD and SS system in WAs 24, 25, 28, 29, and 30 and portion of SD and SS system in WA 25

Conduct radiological free-release surveys for remaining areas within Parcel D-1 including the NRDL site, remaining adjoining berths, SD and SS systems in WA 13, and remaining SD and SS system in WA 25 (Phase 2).

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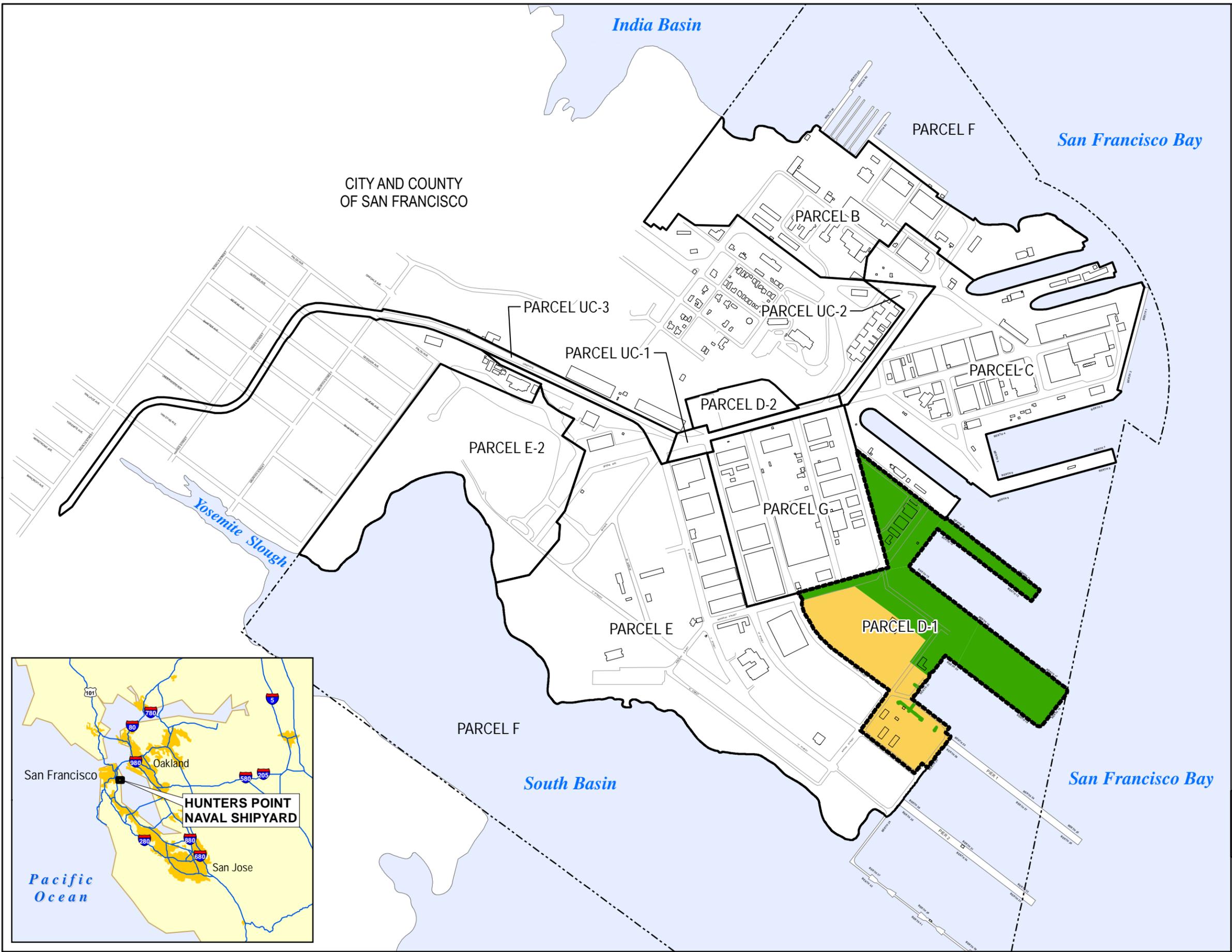
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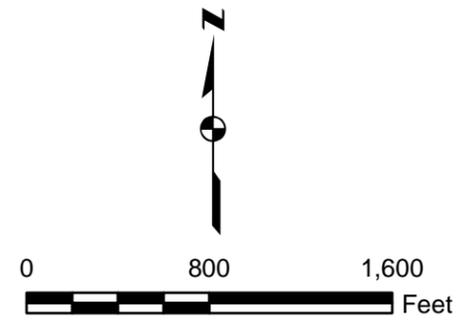
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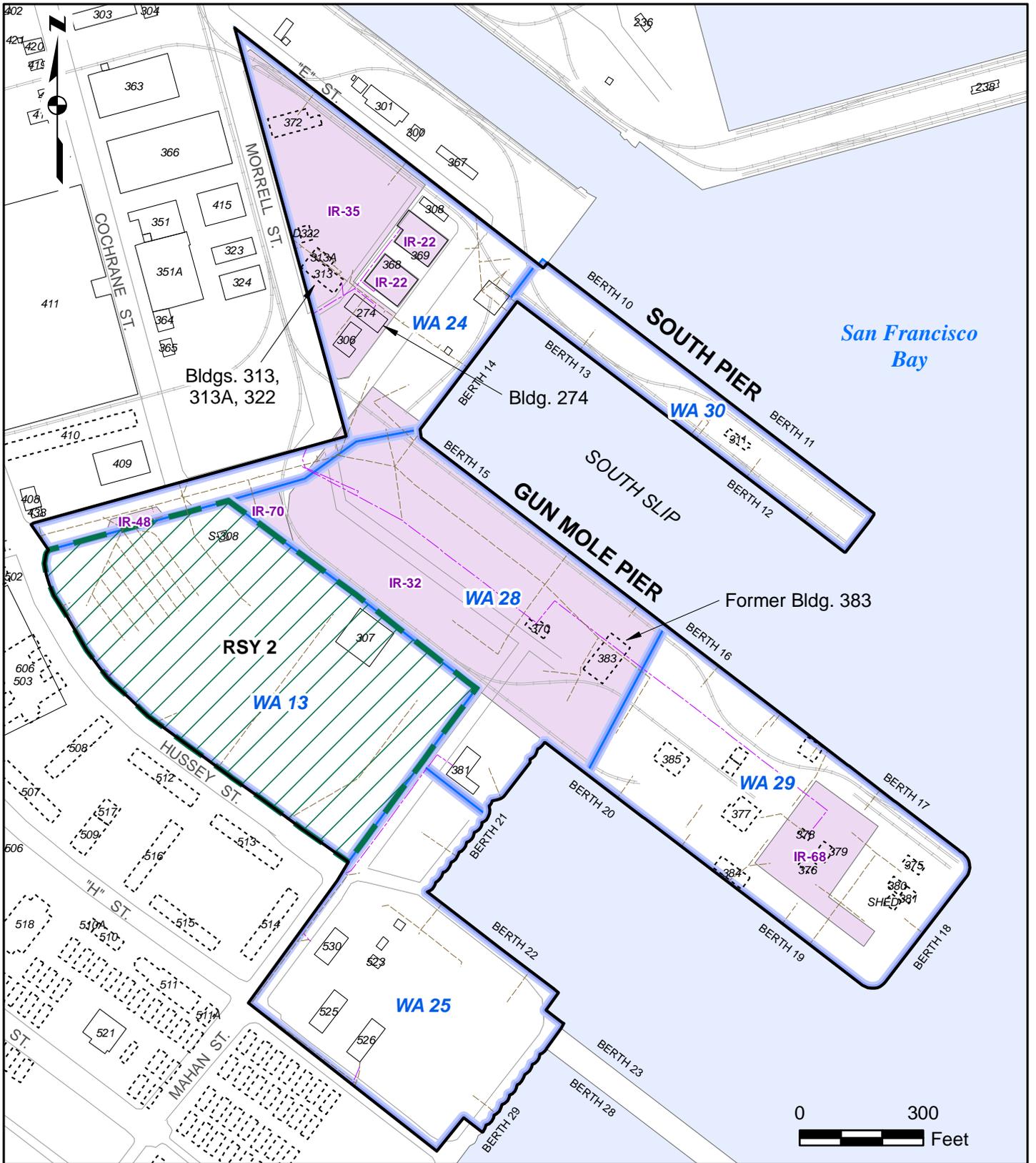
- Legend**
-  Parcel D-1
 -  Phase 1
 -  Phase 2
 -  Parcel Boundary
 -  Parcel F Boundary
 -  Buildings



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FIGURE 1
HUNTERS POINT NAVAL SHIPYARD
AND PARCEL D-1 LOCATION MAP
 RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
 PARCEL D-1
 HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

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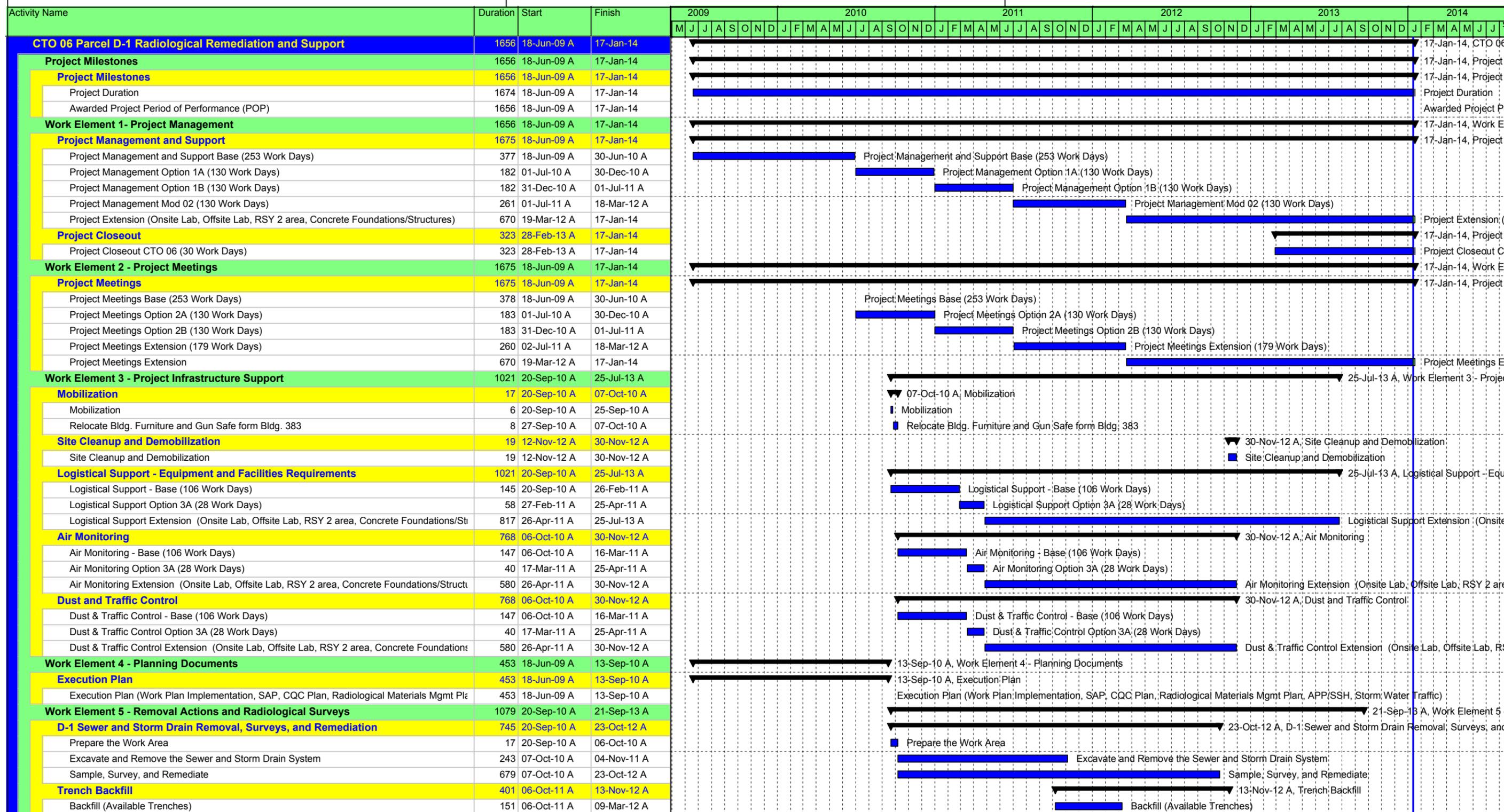


Legend

- Storm Drain Line
- - - Sanitary Sewer Line
- Parcel D-1 IR Site
- Parcel D-1 Work Area Boundary
- Radiological Screening Yard
- Parcel D-1 Boundary
- Building (Existing)
- Building (Demolished)

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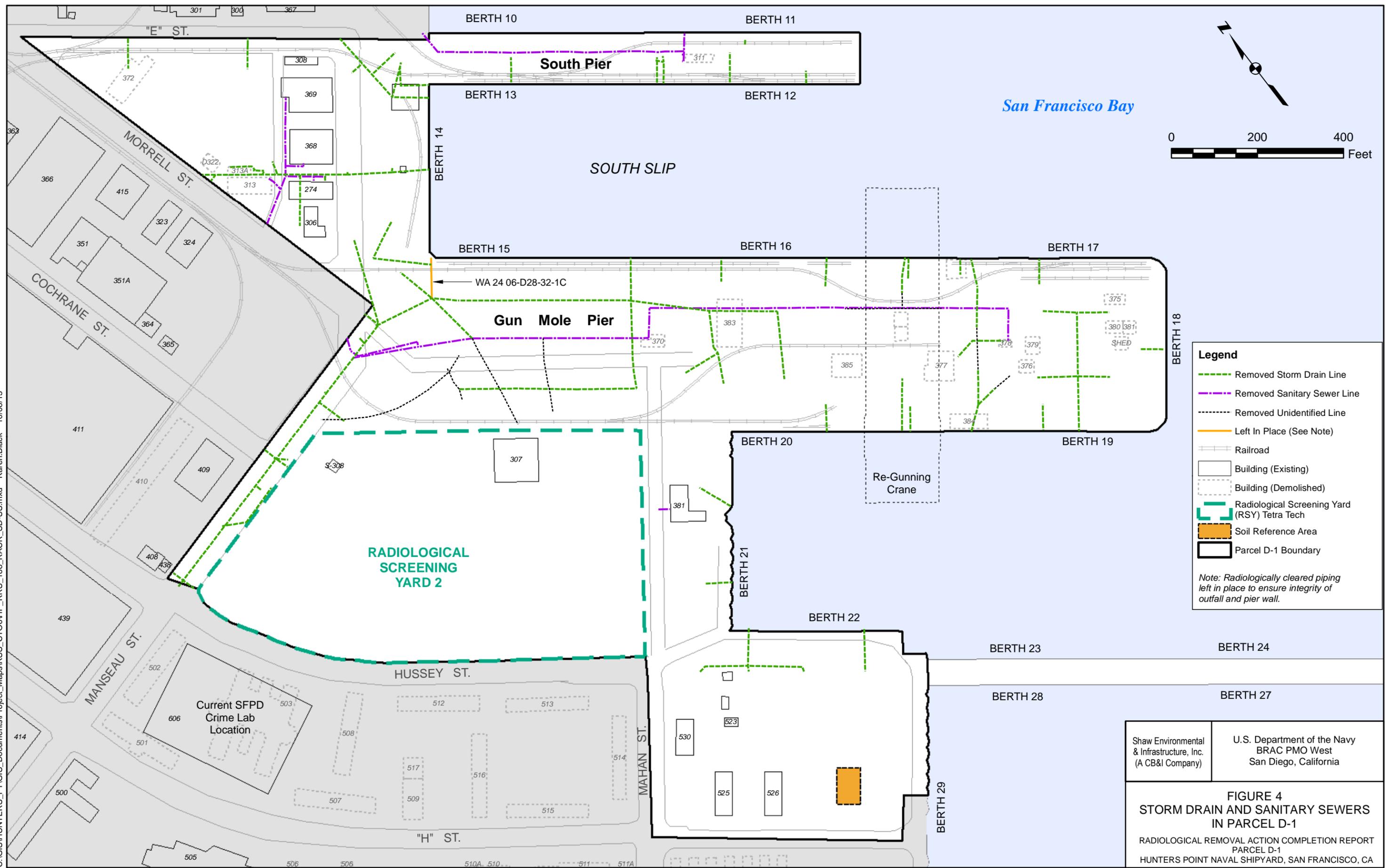
FIGURE 2
PARCEL D-1 IR SITES AND WORK AREAS
 RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
 PARCEL D-1
 HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA



- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work
- ◆ Milestone
- ▬ Summary



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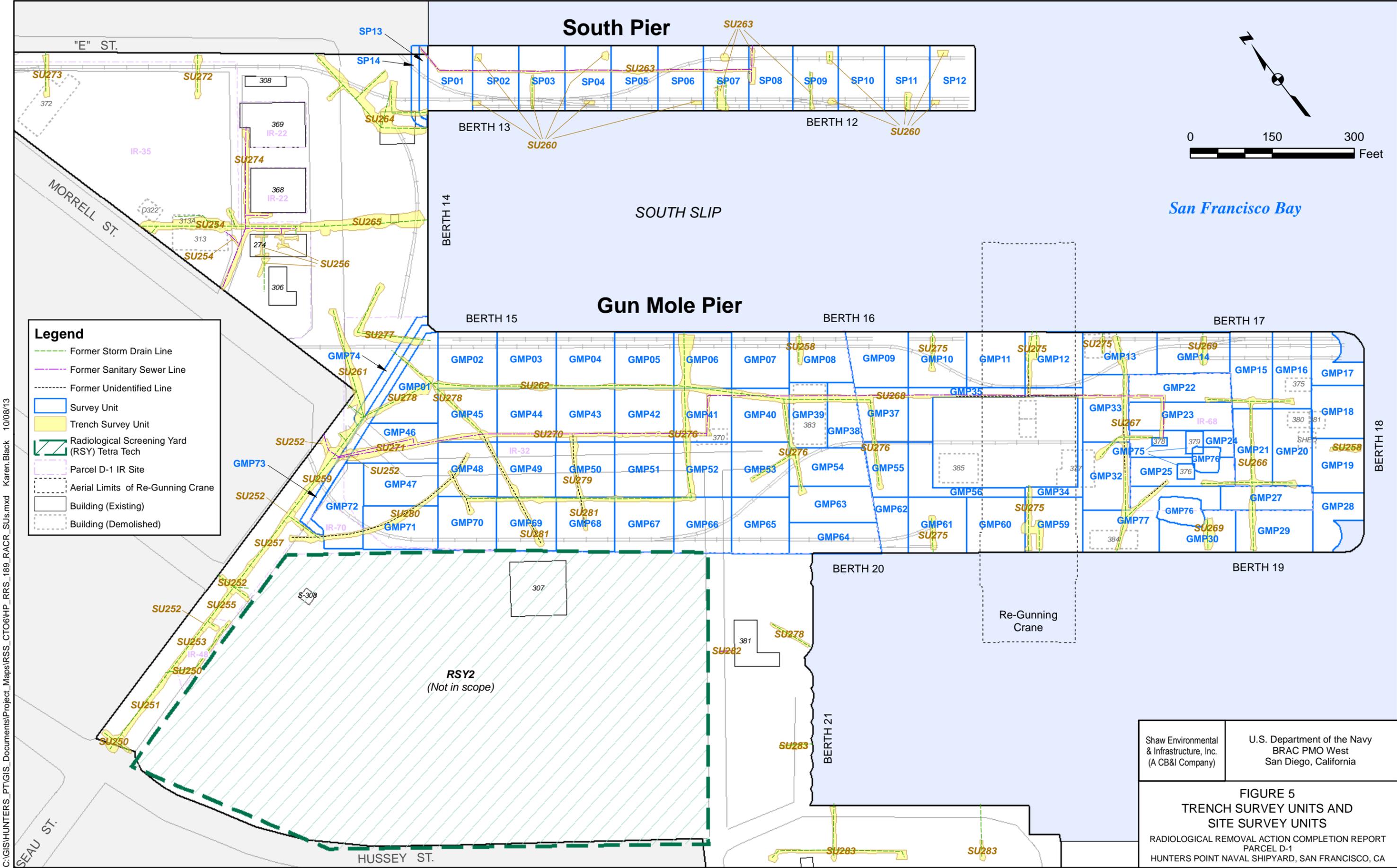


Legend

- Removed Storm Drain Line
- Removed Sanitary Sewer Line
- Removed Unidentified Line
- Left In Place (See Note)
- Railroad
- Building (Existing)
- Building (Demolished)
- Radiological Screening Yard (RSY) Tetra Tech
- Soil Reference Area
- Parcel D-1 Boundary

Note: Radiologically cleared piping left in place to ensure integrity of outfall and pier wall.

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FIGURE 4 STORM DRAIN AND SANITARY SEWERS IN PARCEL D-1	
RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT PARCEL D-1 HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA	



Legend

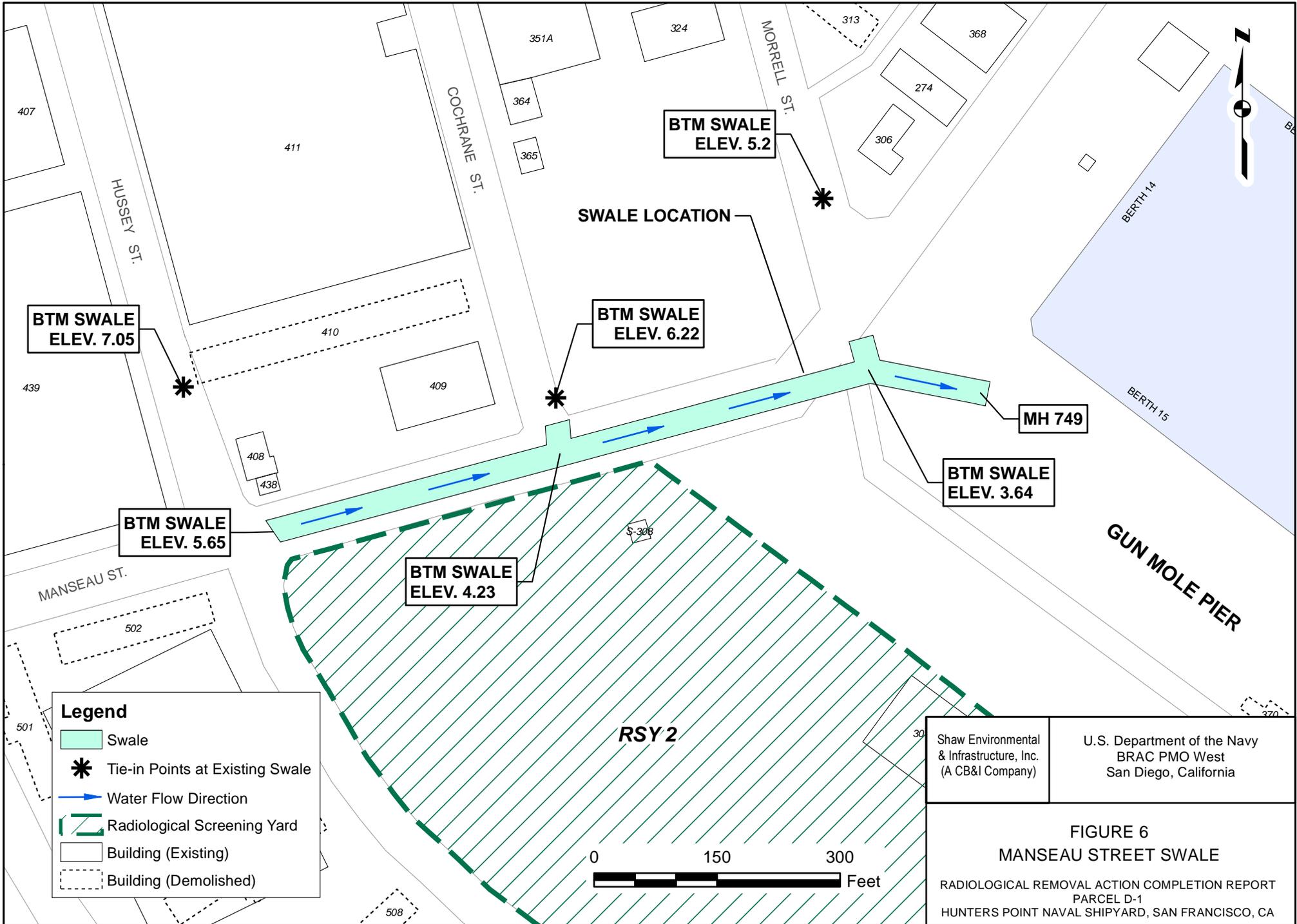
- Former Storm Drain Line
- Former Sanitary Sewer Line
- Former Unidentified Line
- Survey Unit
- Trench Survey Unit
- Radiological Screening Yard (RSY) Tetra Tech
- Parcel D-1 IR Site
- Aerial Limits of Re-Gunning Crane
- Building (Existing)
- Building (Demolished)

North Arrow

0 150 300 Feet

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FIGURE 5 TRENCH SURVEY UNITS AND SITE SURVEY UNITS	
RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT PARCEL D-1 HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA	

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Legend

- Swale
- Tie-in Points at Existing Swale
- Water Flow Direction
- Radiological Screening Yard
- Building (Existing)
- Building (Demolished)

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FIGURE 6
MANSEAU STREET SWALE
RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
PARCEL D-1
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

Tables

Table 1
Radionuclides of Concern for Parcel D-1 Sites

Building/Site	Radionuclides of Concern				
	¹³⁷ Cs	²³⁹ Pu	²²⁶ Ra	⁹⁰ Sr	²³² Th
Building 274	•		•	•	
Building 313	•	•	•	•	•
Building 313 A	•	•	•	•	•
Building 322	•	•	•	•	•
Building 383			•	•	
Gun Mole Pier	•	•	•	•	
South Pier	•	•	•	•	
Storm Drain and Sanitary Sewer Systems—throughout the entire parcel	•		•	•	
Sewers within Building 274 Radiologically-Impacted Area	•	•	•	•	•
Sewers within Building Sites 313/313A/322 Radiologically-Impacted Areas	•	•	•	•	•
Sewers within Building 383 Radiologically-Impacted Area	•		•	•	
Sewers within Gun Mole Pier Radiologically-Impacted Area	•	•	•	•	
Sewers within South Pier Radiologically-Impacted Area	•	•	•	•	

Notes:

¹³⁷ Cs	<i>cesium-137</i>
²²⁶ Ra	<i>radium-226</i>
⁹⁰ Sr	<i>strontium-90</i>
²³⁹ Pu	<i>plutonium-239</i>
²³² Th	<i>thorium-232</i>

**Table 2
Radiological Release Criteria**

Radionuclide	Surfaces			Soil ^d (pCi/g)				Water ^h (pCi/L)
	Equipment, Waste (dpm/100 cm ²) ^a	Structures (dpm/100 cm ²) ^b	Residual Dose (mrem/yr) ^c	Outdoor Worker (pCi/g) ^e	Residual Dose (mrem/yr) ^c	Residential (pCi/g) ^e	Residual Dose (mrem/yr) ^c	
Cesium-137	5,000	5,000	1.72	0.113	0.2142	0.113	0.2561	119
Plutonium-239	100	100	18.1	14.0	1.743	2.59	1.138	15
Radium-226	100	100	0.612	1.0 ^g	6.342	1.0 ^g	14.59	5 ⁱ
Strontium-90	1,000	1,000	0.685	10.8	0.1931	0.331	1.648	8
Thorium-232	1,000	36.5	24.9	2.7	24.91	1.69	25	15

Notes:

Criteria for other nuclides will be listed in TSPs, if needed.

^a*These limits are based on AEC Regulatory Guide 1.86 (1974). Limits for removable surface activity are 20 percent of these values.*

^b*These limits are based on 25 mrem/yr, using RESRAD-Build Version 3.3 or Regulatory Guide 1.86, whichever is lower.*

^c*The resulting dose is based on modeling using RESRAD-Build Version 3.3 or RESRAD Version 6.3, with radon pathways turned off.*

^d*EPA PRGs for two future-use scenarios.*

^e*The on-site and off-site laboratory will ensure that the MDA meets the listed release criteria by increasing sample size or counting time as necessary. The MDA is defined as the lowest net response level, in counts, that can be seen with a fixed level of certainty, customarily 95 percent. The MDA is calculated per sample by considering background counts, amount of sample used, and counting time.*

^f*Based on EPA-decay corrected PRGs for commercial reuse and a previous action memorandum (TtEMI, 2000, 2001).*

^g*Limit is 1 pCi/g above background, per agreement with EPA.*

^h*Release criteria for water have been derived from Radionuclides Notice of Data Availability Technical Document, (EPA, 2000) by comparing the limits from two criteria and using the most conservative limit.*

ⁱ*Limit is for total radium concentration.*

AEC	Atomic Energy Commission	mrem/yr	millirem per year
cm ²	square centimeters	pCi/g	picocurie per gram
dpm	disintegrations per minute	pCi/L	picocurie per liter
EPA	U.S. Environmental Protection Agency	PRG	Preliminary Remediation Goal
MDA	minimum detectable activity	TSP	Task-Specific Plan

Table 3
Release Criteria for Storm Drains and Sanitary Sewers

Radionuclide	Applicability within Parcel D-1		Soil ^a (pCi/g)		Water (pCi/L) ^c
	All Sewers	Sewers within One or More Specific Radiological Sites ^b	Residential	Outdoor Worker	
Cesium-137	Yes	(all sewers)	0.113	0.113	119
Plutonium-239	No	Gun Mole Pier, South Pier, Buildings 313, 313A and 322 Sites	2.59	14.0	15
Radium-226	Yes	(all sewers)	1.0 ^d	1.0 ^d	5 ^e
Strontium-90	Yes	(all sewers)	0.331	10.8	8
Thorium-232	No	Gun Mole Pier, South Pier, Buildings 313, 313A and 322 Sites	1.69	2.7	15

Notes:

^aThe on-site and off-site laboratory will ensure that the MDA meets the listed release criteria by increasing sample size or counting time as necessary. The MDA is defined as the lowest net response level, in counts, that can be seen with a fixed level of certainty, customarily 95 percent. The MDA is calculated per sample by considering background counts, amount of sample used, and counting time.

^bRadiological Sites within Parcel D-1 are: Building 274; Building 383 Site; Buildings 313, 313A and 322 Sites; Gun Mole Pier; and South Pier.

^cRelease criteria for water have been derived from Radionuclides Notice of Data Availability Technical Document (EPA, 2000) by comparing the limits from two criteria and using the most conservative limit.

^dLimit is 1 pCi/g above background per agreement with EPA

^eLimit is for total radium concentration

^fBased on EPA-decay corrected PRGs for commercial reuse and a previous action memorandum (TiEMI, 2000, 2001)

EPA U.S. Environmental Protection Agency
MDA minimum detectable activity
pCi/g picocurie per gram
pCi/L picocurie per liter

Table 4
Derived Airborne Concentration for Radionuclides of Concern

Radionuclide	Radiation	DAC ($\mu\text{Ci}/\text{mL}$)	10% DAC ($\mu\text{Ci}/\text{mL}$)
Radium-226	Alpha (α)	3.0×10^{-10}	3.0×10^{-11}
Plutonium-239		3.0×10^{-12}	3.0×10^{-13}
Thorium-232		5.0×10^{-13}	5.0×10^{-14}
Strontium-90	Beta (β^-)	8.0×10^{-9}	8.0×10^{-10}
Cesium-137	Beta/gamma (β^-/γ)	6.0×10^{-8}	6.0×10^{-9}

Notes:

$\mu\text{Ci}/\text{mL}$

microcurie per milliliter

DAC

derived airborne concentration

Table 5
Parcel D-1 Trench Survey Unit Data Summary

WA	Trench Survey Unit	Associated Trench Segments	Surface Area (m ²)	Length (feet)	Total Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data			Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	Date Backfill Completed		
24	250	06-D24-00-6A 06-D24-00-6B 06-D24-00-6C 06-D24-00-6E 06-D24-48-6C 06-D24-48-6D	494	285	84	²²⁶ Ra ¹³⁷ Cs ¹³⁷ Cs	1.663 0.144 0.177	10.8	ESU 354 ESU 356 ESU 357 ESU 384 ESU 389	100 30 100 50 110	10/19/2011	The model of the backfill material used for Survey Unit 250 resulted in a maximum above background dose of 1.8 mrem/yr and an excess cancer risk of 3E-05. The model of the Trench Survey Unit 250 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06.	No further action.
24	251	06-D24-00-6A	300	131	18	N/A	N/A	N/A	ESU 354 ESU 356	50 220	12/20/2011	The model of the backfill material used for Survey Unit 251 resulted in a maximum above background dose of 1.8 mrem/yr and an excess cancer risk of 3E-05. The model of the Trench Survey Unit 251 resulted in a maximum above background dose of 0.3 mrem/yr and an excess cancer risk of 4E-06.	No further action.
24	252	06-D24-00-6E 06-D24-00-6F 06-D24-00-6G 06-D24-00-6H 06-D24-00-6I 06-D24-00-6K 06-D24-00-6L 06-D24-00-7A 06-D24-00-8A 06-D24-00-8C 06-D24-32-7A 06-D24-32-8A 06-D24-48-6F	581	317	20	N/A	N/A	N/A	ESU 354 ESU 357 ESU 358 ESU 360 ESU 384 ESU 389 Import Fill	30 30 110 80 80 20 180	10/10/2011	The model of the backfill material used at Survey Unit 252 resulted in a maximum above background dose of 0.6 mrem/yr and an excess cancer risk of 9.9E-06. The model of the Trench Survey Unit 252 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06.	No further action.
24	253	06-D24-00-6E	174	74	97	²²⁶ Ra ¹³⁷ Cs ¹³⁷ Cs ¹³⁷ Cs	1.571 0.153 0.177 0.167	8.2	ESU 357	160	12/20/2011	The model of the backfill material used in Survey Unit 253 resulted in a maximum above-background dose of 2.1 mrem/yr and an excess cancer risk of 4E-05. The model of the trench Survey Unit 253 resulted in a maximum above-background dose of 0.2 mrem/yr and an excess cancer risk of 2.5E-06.	No further action.
24	254	06-D24-35-2A 06-D24-35-2B 06-D24-35-2C 06-D24-35-2D 06-D24-35-2E 06-D24-35-2F 06-D24-35-4G	410	329	147	²²⁶ Ra ⁹⁰ Sr ²²⁶ Ra ²²⁶ Ra	1.506 0.666 1.511 1.896 1.51 1.77 1.982 1.67 2.107 1.52 1.716 1.487 1.977 1.885	332	ESU 345 Import Fill	50 459	8/21/2012	The model of the backfill material used at Survey Unit 254 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 2E-06. The model of the trench Survey Unit 254 resulted in a maximum above background dose of 0.8 mrem/yr and an excess cancer risk of 1E-05.	No further action.

Table 5
Parcel D-1 Trench Survey Unit Data Summary

WA	Trench Survey Unit	Associated Trench Segments	Surface Area (m ²)	Length (feet)	Total Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data			Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	Date Backfill Completed		
24	255	06-D24-00-6E	102	57	42	¹³⁷ Cs ²²⁶ Ra	0.115 1.703	3.7	ESU 358	90	12/21/2011	The model of the backfill material resulted in a maximum above-background dose of 1.7 mrem/yr and an excess cancer risk of 3E-05. The model of the trench survey unit resulted in a maximum above-background dose of 0.14 mrem/yr and an excess cancer risk of 2E-06.	No further action.
24	256	06-D24-35-2H	97	179	22	N/A	N/A	N/A	Import Fill	48	8/21/2012	The model of the backfill material used at Survey Unit 256 resulted in a maximum above background dose of 0.06 millirem per year (mrem/yr) and an excess cancer risk of 1E-06. The model of the trench Survey Unit 256 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 2E-06.	No further action.
24	257	06-D24-00-6K	192	102	43	²²⁶ Ra	1.542	1.5	ESU 359 ESU 358	250 50	10/18/2011	The model of the backfill material used for Survey Unit 257 resulted in a maximum above-background dose of 1.7 mrem/yr and an excess cancer risk of 3E-05. The model of the trench survey unit resulted in a maximum above-background dose of 0.2 mrem/yr and an excess cancer risk of 3E-06.	No further action.
28, 29	258	06-D28-32-4A 06-D29-00-15A	152	107	18	N/A	N/A	N/A	Import Fill ESU 412	90 90	12/6/2011	The model of the backfill material used for Survey Unit 258 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 2E-06. The model of the trench Survey Unit 258 resulted in a maximum above background dose of 0.2 mrem/yr and an excess cancer risk of 3E-06.	No further action.
24	259	06-D24-00-6K 06-D24-00-6M 06-D24-00-6N 06-D24-00-6O 06-D24-00-7A 06-D24-00-8B	411	189	49	²²⁶ Ra	2.253	5.4	ESU 361 ESU 360 ESU 362 Import Fill	250 170 20 50	10/10/2011	The model of the backfill material used for Survey Unit 259 resulted in a maximum above background dose of 1.891 mrem/yr and an excess cancer risk of 3.239E-05. The model of the trench Survey Unit 259 resulted in a maximum above background dose of 0.3232 mrem/yr and an excess cancer risk of 4.330E-06.	No further action.
30	260	06-D30-00-1A 06-D30-00-4A 06-D30-00-5A	205	99	45	²²⁶ Ra	1.633	2.3	Import Fill	280	8/20/2012	The model of the backfill material used at Survey Unit 260 resulted in a maximum above-background dose of 0.1 millirem per year (mrem/yr) and an excess cancer risk of 1E-06. The model of the trench survey unit resulted in a maximum above-background dose of 0.2 mrem/yr and an excess cancer risk of 3E-06.	No further action.
24	261	06-D24-00-6O 06-D24-00-6P 06-D24-00-6S 06-D24-32-6O 06-D24-32-6P 06-D24-32-6Q 06-D24-32-6R 06-D24-32-6S	595	338	22	N/A	N/A	N/A	ESU 362 Import Fill	20 790	10/14/2011	The model of the backfill material used at Survey Unit 261 resulted in a maximum above background dose of 0.09 mrem/yr and an excess cancer risk of 1E-06. The model of the trench Survey Unit 261 resulted in a maximum above background dose of 0.6 mrem/yr and an excess cancer risk of 8E-06.	No further action.

Table 5
Parcel D-1 Trench Survey Unit Data Summary

WA	Trench Survey Unit	Associated Trench Segments	Surface Area (m ²)	Length (feet)	Total Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data			Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	Date Backfill Completed		
28	262	06-D28-32-1F 06-D28-32-1G 06-D28-32-1H 06-D28-32-1I 06-D28-32-1L 06-D28-32-1M	1228	767	25	N/A	N/A	N/A	Import Fill	1260	12/22/2011	The model of the backfill material used for Trench Survey Unit 262 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1E-06. The model of the trench Survey Unit 262 resulted in a maximum above background dose of 0.8 mrem/yr and an excess cancer risk of 1E-05.	No further action.
30	263	06-D30-00-2A 06-D30-00-2B 06-D30-00-2C 06-D30-00-2D 06-D30-00-3A 06-D30-00-6A 06-D30-00-6B 06-D30-00-6C	547	928	18	N/A	N/A	N/A	ESU 374 Import Fill	160 70	8/20/2012	The model of the backfill material used at trench Survey Unit 263 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06. The model of the trench Survey Unit 263 resulted in a maximum above background dose of 1.8 mrem/yr and an excess cancer risk of 3E-05.	No further action.
24	264	06-D24-00-5A 06-D24-00-5B 06-D24-00-5C 06-D24-00-5D 06-D24-00-5E 06-D24-00-5F	878	568	18	N/A	N/A	N/A	ESU 350 ESU 354 ESU 362 ESU 384 Import Fill	120 70 210 80 800	10/7/2012	The model of the backfill material resulted in a maximum above background dose of 0.3 mrem/yr and an excess cancer risk of 4E-06. The model of the Trench Survey Unit 264 resulted in a maximum above background dose of 0.8 mrem/yr and an excess cancer risk of 1E-05.	No further action.
24	265	06-D24-35-2F 06-D24-00-2F 06-D24-00-2J 06-D24-00-2K 06-D24-00-2L 06-D24-00-2M	541	233	141	²²⁶ Ra ²²⁶ Ra	2.094 1.705 1.562 2.022 1.679 1.7 2.827 1.601 1.779 1.593 1.916 1.768 1.655	138	ESU 589 ESU 394 ESU 358 ESU 359 ESU 357 Import Fill	130 120 33 33 33 545	8/22/2012	The model of the backfill material used at Survey Unit 265 resulted in a maximum above background dose of 0.3 mrem/yr and an excess cancer risk of 4E-06. The model of the trench Survey Unit 265 resulted in a maximum above background dose of 0.5 mrem/yr and an excess cancer risk of 7E-05.	No further action.
29	266	06-D29-00-14A 06-D29-00-14B 06-D29-00-14C 06-D29-00-14D 06-D29-00-14E 06-D29-00-14F 06-D29-00-14G 06-D29-68-14A 06-D29-68-14D 06-D29-68-14F	726	600	74	¹³⁷ Cs ¹³⁷ Cs ¹³⁷ Cs ¹³⁷ Cs	0.251 0.307 0.338 0.682	14	ESU 412 ESU 424 ESU 434 Import Fill	160 250 80 190	3/12/2012	The model of the backfill material used for Trench Survey Unit 266 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06. The model of Trench Survey Unit 266 resulted in a maximum above background dose of 0.5 mrem/yr and an excess cancer risk of 7E-06.	No further action.

Table 5
Parcel D-1 Trench Survey Unit Data Summary

WA	Trench Survey Unit	Associated Trench Segments	Surface Area (m ²)	Length (feet)	Total Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data			Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	Date Backfill Completed		
29	267	06-D29-00-1B 06-D29-00-9A 06-D29-00-9B 06-D29-00-10A 06-D29-00-11A 06-D29-00-11B 06-D29-00-11C 06-D29-00-11D 06-D29-68-1B 06-D29-68-10A 06-D29-68-11B 06-D29-68-11E	857	778	18	N/A	N/A	N/A	ESU 434 ESU 444 Import Fill	100 40 460	10/26/2012	The model of the backfill material used for Trench Survey Unit 267 resulted in a maximum above background dose of 0.2 mrem/yr and an excess cancer risk of 3E-06. The model of Trench Survey Unit 267 resulted in a maximum above background dose of 0.8 mrem/yr and an excess cancer risk of 1E-05.	No further action.
28, 29	268	06-D28-32-1M 06-D28-32-1N 06-D28-32-1R 06-D28-32-2H 06-D29-00-1A 06-D29-00-16A 06-D29-00-2A	785	1129	18	N/A	N/A	N/A	ESU 443 ESU 444 ESU 456 Import Fill	70 170 20 480	10/18/2011	The model of the backfill material used for Survey Unit 268 resulted in a maximum above background dose of 0.3 mrem/yr and an excess cancer risk of 4E-06. The model of the trench surfaces for Survey Unit 268 resulted in a maximum above background dose of 0.6 mrem/yr and an excess cancer risk of 8E-06.	No further action.
29	269	06-D29-00-12A 06-D29-00-13A	192	119	18	N/A	N/A	N/A	ESU 444 Import Fill	40 260	10/28/2011	The model of the backfill material used for Trench Survey Unit 269 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1E-06. The model of Trench Survey Unit 269 resulted in a maximum above background dose of 0.2 mrem/yr and an excess cancer risk of 3E-06.	No further action.
28	270	06-D28-32-2E	393	235	28	N/A	N/A	N/A	Import Fill	320	3/13/2012	The model of the backfill material used at Survey Unit 270 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1E-06. The model of the trench Survey Unit 270 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06.	No further action.
28	271	06-D28-32-1E 06-D28-32-2A 06-D28-32-2B 06-D28-32-2C 06-D28-32-2D	663	405	39	N/A	N/A	N/A	Import Fill	770	8/23/2012	The model of the backfill material used at Survey Unit 271 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1E-06. The model of the trench Survey Unit 271 resulted in a maximum above background dose of 0.5 mrem/yr and an excess cancer risk of 6E-06.	No further action.
24	272	06-D24-00-3A 06-D24-35-3A	99	72	24	N/A	N/A	N/A	Import Fill	110	10/6/2011	The model of the backfill material used for Survey Unit 272 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1E-06. The model of the trench Survey Unit 272 resulted in a maximum above background dose of 0.2 mrem/yr and an excess cancer risk of 2E-06.	No further action.

Table 5
Parcel D-1 Trench Survey Unit Data Summary

WA	Trench Survey Unit	Associated Trench Segments	Surface Area (m ²)	Length (feet)	Total Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data			Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	Date Backfill Completed		
24	273	06-D24-00-1A 06-D24-35-1A	109	73	23	N/A	N/A	N/A	Import Fill	110	10/6/2011	The model of the backfill used for trench Survey Unit 273 resulted in a maximum above background dose of 0.1 millirem per year (mrem/yr) and an excess cancer risk of 1E-06. The model of the trench Survey Unit 273 resulted in a maximum above background dose of 0.2 mrem/yr and an excess cancer risk of 2E-06.	No further action.
24	274	06-D24-35-2I 06-D24-35-2F 06-D24-35-2G 06-D24-00-4A 06-D24-35-4A 06-D24-00-4B 06-D24-00-4C 06-D24-35-4D 06-D24-35-4E 06-D24-35-4F	883	615	39	N/A	N/A	N/A	ESU 345 ESU 350 Import Fill	220 130 780	10/14/2011	The model of the backfill material resulted in a maximum above background dose of 0.3 mrem/yr and an excess cancer risk of 4E-06. The model of Trench Survey Unit 274 resulted in a maximum above background dose of 0.9 mrem/yr and an excess cancer risk of 1E-05.	No further action.
29	275	06-D29-00-3A 06-D29-00-4A 06-D29-00-5A 06-D29-00-5B 06-D29-00-6A 06-D29-00-6B 06-D29-00-6C 06-D29-00-6D 06-D29-00-7A 06-D29-00-8A 06-D29-00-16B	628	519	18	N/A	N/A	N/A	ESU 430 ESU 453 ESU 456 Import Fill	40 80 230 160	8/20/2012	The model of the backfill material used at Survey Unit 275 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06. The model of the trench Survey Unit 275 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 6E-06.	No further action.
28, 29	276	06-D28-32-1J 06-D28-32-1N 06-D28-32-1O 06-D28-32-1P 06-D28-32-1Q 06-D28-32-2E 06-D28-32-2F 06-D28-32-2G 06-D29-00-2B	467	871	18	N/A	N/A	N/A	ESU 453 Import Fill	170 850	11/2/2011	The model of the backfill material used for Survey Unit 276 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 2E-06. The model of Trench Survey Unit 276 resulted in a maximum above background dose of 0.5 mrem/yr and an excess cancer risk of 7E-06.	No further action.
24, 28	277	06-D24-00-9A 06-D24-32-9A 06-D24-32-9B 06-D28-32-1D	326	232	18	N/A	N/A	N/A	Import Fill	320	10/24/2011	The model of the backfill used for Trench Survey Unit 277 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1E-06. The model of Tthe trench Survey Unit 277 resulted in a maximum above background dose of 0.3 mrem/yr and an excess cancer risk of 4E-06.	No further action.
24, 28	278	06-D24-32-9C 06-D28-00-5A 06-D28-32-1A 06-D28-32-1B 06-D28-32-1E	524	417	46	¹³⁷ Cs ¹³⁷ Cs ¹³⁷ Cs	0.38 0.213 0.454	3	ESU 464 Import Fill	60 540	10/25/2011	The model of the backfill material resulted in a maximum above-background dose of 0.2 mrem/yr and an excess cancer risk of 3E-06. The model of the trench survey unit resulted in a maximum above-background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06.	No further action.

Table 5
Parcel D-1 Trench Survey Unit Data Summary

WA	Trench Survey Unit	Associated Trench Segments	Surface Area (m ²)	Length (feet)	Total Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data			Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	Date Backfill Completed		
28	279	06-D28-32-1K 06-D28-32-1S 06-D28-32-1T 06-D28-32-1W 06-D28-32-2I	788	573	23	N/A	N/A	N/A	Import Fill	700	3/14/2012	The model of the backfill material used at Survey Unit 279 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1.2E-06. The model of Trench Survey Unit 279 resulted in a maximum above background dose of 0.5 mrem/yr and an excess cancer risk of 7.1E-06.	No further action.
28	280	06-D28-70-3A 06-D28-70-3B 06-D28-32-3B 06-D28-32-1T 06-D28-32-1U 06-D28-32-1V 06-D28-32-1X	809	598	18	N/A	N/A	N/A	Import Fill	870	3/15/2012	The model of the backfill material used at Survey Unit 280 resulted in a maximum above background dose of 0.1 mrem/yr and an excess cancer risk of 1E-06. The model of Trench Survey Unit 280 resulted in a maximum above background dose of 0.5 mrem/yr and an excess cancer risk of 7E-06.	No further action.
28	281	06-D28-32-1W 06-D28-32-2I	210	155	20	N/A	N/A	N/A	Import Fill	150	8/22/2012	The model of the backfill material used at Survey Unit 281 resulted in a maximum above background dose of 0.07 mrem/yr and an excess cancer risk of 1E-06. The model of the trench Survey Unit 281 resulted in a maximum above background dose of 0.2 mrem/yr and an excess cancer risk of 3E-06.	No further action.
28	282	06-D28-00-6A	21	26	27	N/A	N/A	N/A	ESU 619/623	10	8/20/2012	The model of the backfill material used at Trench Survey Unit 282 resulted in a maximum above background dose of 0.07 mrem/yr and an excess cancer risk of 1E-06. The model of Trench Survey Unit 282 resulted in a maximum above background dose of 0.07 mrem/yr and an excess cancer risk of 1E-06.	No further action.
25	283	06-D25-00-1A 06-D25-00-2A 06-D25-00-2B 06-D25-00-2C 06-D25-00-3A	520	493	18	N/A	N/A	N/A	ESU 619/623 ESU 622 Import Fill	65 250 45	8/23/2012	The model of the backfill material used at Survey Unit 283 resulted in a maximum above background dose of 0.5 mrem/yr and an excess cancer risk of 7E-06. The model of the trench Survey Unit 283 resulted in a maximum above background dose of 0.4 mrem/yr and an excess cancer risk of 5E-06.	No further action.

Notes:
¹³⁷ Cs - cesium-137
²²⁶ Ra - radium-226
⁹⁰ Sr - strontium-90
 cy - cubic yards
 ESU - excavated soil unit
 m² - square meters
 mrem/yr - millirem per year
 N/A - not applicable
 pCi/g - picocurie per gram
 RASO - Radiological Affairs Support Office
 ROC - radionuclide of concern
 WA - Work Area

Table 6
Parcel D-1 Trench Survey Units and Associated Trench Segment Data

WA	Trench Survey Unit	Trench Segment ID No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Minimum Depth of Trench (feet bgs)	Maximum Depth of Trench (feet bgs)	Minimum Depth of Pipe (feet bgs)	Maximum Depth of Pipe (feet bgs)	Final Disposition
24	250	06-D24-00-6A	SD	RCP	27	6	8	5	7	Non-LLRW
		06-D24-00-6B	SD	CIP	8					LLRW
		06-D24-00-6C	SD	CMP	8					LLRW
		06-D24-00-6E	SD	RCP	30					Non-LLRW
		06-D24-48-6C	SD	CMP	8					LLRW
		06-D24-48-6D	SD	CMP	6					LLRW
24	251	06-D24-00-6A	SD	RCP	27	8	10	7	9	Non-LLRW
24	252	06-D24-00-6E	SD	RCP	30	3	5.4	2	4.4	Non-LLRW
		06-D24-00-6F	SD	Metal	6					LLRW
		06-D24-00-6G	SD	Metal	6					LLRW
		06-D24-00-6H	SD	RCP	24					LLRW
		06-D24-00-6I	SD	VCP	8					RSY
		06-D24-00-6K	SD	RCP	36					LLRW
		06-D24-00-6L	SD	VCP	4					RSY
		06-D24-00-7A	SS	VCP	8					RSY
		06-D24-00-8A	SS	VCP	8					RSY
		06-D24-00-8C	SS	RCP	15					Non-LLRW
		06-D24-32-7A	SS	VCP	8					RSY
		06-D24-32-8A	SS	VCP	8					RSY
		06-D24-48-6F	SD	Metal	6					LLRW
24	253	06-D24-00-6E	SD	RCP	30	4	8	3	7	LLRW
24	254	06-D24-35-2A	SD	VCP	24	5	5.5	4	4.5	RSY
		06-D24-35-2B	SD	VCP	6					RSY
		06-D24-35-2C	SD	VCP	6					RSY
		06-D24-35-2D	SD	CIP	3					LLRW
		06-D24-35-2E	SD	CIP	2					LLRW
		06-D24-35-2F	SD	VCP	24					RSY
		06-D24-35-4G	SS	VCP	6					RSY
		24	255	06-D24-00-6E	SD					RCP
24	256	06-D24-35-2H	SD	Metal	2-4	0.5	4	0	3	LLRW
24	257	06-D24-00-6K	SD	RCP	36	5.5	7	4.5	6	Non-LLRW
28, 29	258	06-D28-32-4A	SD	Metal	3	4	6	3	5	LLRW
		06-D29-00-15A	SD	Metal	3					LLRW

Table 6
Parcel D-1 Trench Survey Units and Associated Trench Segment Data

WA	Trench Survey Unit	Trench Segment ID No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Minimum Depth of Trench (feet bgs)	Maximum Depth of Trench (feet bgs)	Minimum Depth of Pipe (feet bgs)	Maximum Depth of Pipe (feet bgs)	Final Disposition
24	259	06-D24-00-6K	SD	RCP	36	5	6	4	5	Non-LLRW
		06-D24-00-6M	SD	Metal	6					LLRW
		06-D24-00-6N	SD	RCP	36					Non-LLRW
		06-D24-00-6O	SD	RCP	36					Non-LLRW
		06-D24-00-7A	SS	VCP	8					RSY
		06-D24-00-8B	SS	VCP	8					RSY
30	260	06-D30-00-1A	SD	Steel	4	2.5	6	1.5	6	LLRW
		06-D30-00-4A	SD	Steel	4					LLRW
		06-D30-00-5A	SD	Steel	4					LLRW
24	261	06-D24-00-6O	SD	RCP	36	4.2	5.5	3.2	4.5	RSY
		06-D24-00-6P	SD	Metal	8					LLRW
		06-D24-00-6S	SD	RCP	15					RSY
		06-D24-32-6O	SD	RCP	36					RSY
		06-D24-32-6P	SD	Metal	8					LLRW
		06-D24-32-6Q	SD	Metal	6					LLRW
		06-D24-32-6R	SD	RCP	15					RSY
		06-D24-32-6S	SD	RCP	15					RSY
28	262	06-D28-32-1F	SD	N/A	N/A	3	8	2	7	LLRW
		06-D28-32-1G	SD	RCP	12					LLRW
		06-D28-32-1H	SD	RCP	12					LLRW
		06-D28-32-1I	SD	RCP	12					LLRW
		06-D28-32-1L	SD	RCP	27					LLRW
		06-D28-32-1M	SD	RCP	15					LLRW
		30	263	06-D30-00-2A	SD					Metal
06-D30-00-2B	SD			Metal	1	LLRW				
06-D30-00-2C	SD			Metal	1.5	LLRW				
06-D30-00-2D	SD			Metal	4	LLRW				
06-D30-00-3A	SD			Metal	4	LLRW				
06-D30-00-6A	SS			PVC	4	LLRW				
06-D30-00-6B	SS			Metal	4	LLRW				
06-D30-00-6C	SS			Metal	4	LLRW				

Table 6
Parcel D-1 Trench Survey Units and Associated Trench Segment Data

WA	Trench Survey Unit	Trench Segment ID No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Minimum Depth of Trench (feet bgs)	Maximum Depth of Trench (feet bgs)	Minimum Depth of Pipe (feet bgs)	Maximum Depth of Pipe (feet bgs)	Final Disposition						
24	264	06-D24-00-5A	SD	VCP	18	3	5	2	4	RSY						
		06-D24-00-5B	SD	Metal	8					LLRW						
		06-D24-00-5C	SD	Metal	4					LLRW						
		06-D24-00-5D	SD	Metal	10					LLRW						
		06-D24-00-5E	SD	Metal	3					LLRW						
		06-D24-00-5F	SD	VCP	18					RSY						
24	265	06-D24-35-2F	SD	VCP	24	4	8.5	3	7.5	RSY						
		06-D24-00-2F	SD	VCP	24					RSY						
		06-D24-00-2J	SD	VCP	8					RSY						
		06-D24-00-2K	SD	VCP	24					RSY						
		06-D24-00-2L	SD	VCP	12					RSY						
		06-D24-00-2M	SD	VCP	24					RSY						
29	266	06-D29-00-14A	SD	CMP	8	3	5.8	2	4.8	LLRW						
		06-D29-00-14B	SD	CMP	10					LLRW						
		06-D29-00-14C	SD	CMP	12					LLRW						
		06-D29-00-14D	SD	CMP	8					LLRW						
		06-D29-00-14E	SD	CMP	10					LLRW						
		06-D29-00-14F	SD	CMP	12					LLRW						
		06-D29-00-14G	SD	CMP	12					LLRW						
		06-D29-68-14A	SD	CMP	8					LLRW						
		06-D29-68-14D	SD	CMP	8					LLRW						
		06-D29-68-14F	SD	CMP	12					LLRW						
		29	267	06-D29-00-1B	SS					CMP	5	2	6	1	5	LLRW
				06-D29-00-9A	SD					CMP	10					LLRW
06-D29-00-9B	SD			CMP	8	LLRW										
06-D29-00-10A	SD			CMP	2	LLRW										
06-D29-00-11A	SD			CMP	6	LLRW										
06-D29-00-11B	SD			CMP	8	LLRW										
06-D29-00-11C	SD			CMP	8	LLRW										
06-D29-00-11D	SD			CMP	8	LLRW										
06-D29-68-1B	SS			CMP	5	LLRW										
06-D29-68-10A	SD			CMP	2	LLRW										
06-D29-68-11B	SD			CMP	8	LLRW										
06-D29-68-11E	SD			CMP	4	LLRW										

Table 6
Parcel D-1 Trench Survey Units and Associated Trench Segment Data

WA	Trench Survey Unit	Trench Segment ID No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Minimum Depth of Trench (feet bgs)	Maximum Depth of Trench (feet bgs)	Minimum Depth of Pipe (feet bgs)	Maximum Depth of Pipe (feet bgs)	Final Disposition
28, 29	268	06-D28-32-1M	SD	VCP	15	2	4.3	1	3.3	RSY
		06-D28-32-1N	SD	VCP	10					RSY
		06-D28-32-1R	SD	VCP	10					RSY
		06-D28-32-2H	SS	Metal	5					LLRW
		06-D29-00-1A	SS	Metal	5					LLRW
		06-D29-00-16A	SD	RCP	4					LLRW
		06-D29-00-2A	SD	VCP	10					RSY
29	269	06-D29-00-12A	SD	Metal	3	5	6	4	5	LLRW
		06-D29-00-13A	SD	Metal	3					LLRW
28	270	06-D28-32-2E	SS	VCP	8	5	6	4	5	RSY
28	271	06-D28-32-1E	SS	VCP	8	3.5	8.5	2.5	7.5	RSY
		06-D28-32-2A	SS	VCP	8					RSY
		06-D28-32-2B	SS	VCP	8					RSY
		06-D28-32-2C	SS	VCP	8					RSY
		06-D28-32-2D	SS	VCP	8					RSY
24	272	06-D24-00-3A	SD	VCP	10	4	5	4	3	RSY
		06-D24-35-3A	SD	VCP	10					RSY
24	273	06-D24-00-1A	SD	VCP	10	5	5.6	4	4.6	RSY
		06-D24-35-1A	SD	VCP	10					RSY
24	274	06-D24-35-2F	SD	VCP	24	3	9	2	8	RSY
		06-D24-35-2G	SD	VCP	6					RSY
		06-D24-35-2I	SD	CIP	4					LLRW
		06-D24-00-4A	SS	VCP	6					RSY
		06-D24-35-4A	SS	VCP	6					RSY
		06-D24-00-4B	SS	VCP	6					RSY
		06-D24-00-4C	SS	VCP	4					RSY
		06-D24-35-4D	SS	VCP	4					RSY
		06-D24-35-4E	SS	VCP	6					RSY
		06-D24-35-4F	SS	VCP	6					RSY

Table 6
Parcel D-1 Trench Survey Units and Associated Trench Segment Data

WA	Trench Survey Unit	Trench Segment ID No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Minimum Depth of Trench (feet bgs)	Maximum Depth of Trench (feet bgs)	Minimum Depth of Pipe (feet bgs)	Maximum Depth of Pipe (feet bgs)	Final Disposition						
29	275	06-D29-00-3A	SD	Metal	8	1.5	6.9	0.5	5.9	LLRW						
		06-D29-00-4A	SD	Metal	8					LLRW						
		06-D29-00-5A	SD	Metal	8					LLRW						
		06-D29-00-5B	SD	Metal	8					LLRW						
		06-D29-00-6A	SD	Metal	8					LLRW						
		06-D29-00-6B	SD	Metal	8					LLRW						
		06-D29-00-6C	SD	Metal	3					LLRW						
		06-D29-00-6D	SD	Metal	8					LLRW						
		06-D29-00-7A	SD	Metal	3					LLRW						
		06-D29-00-8A	SD	Metal	3					LLRW						
		06-D29-00-16B	SD	Metal	8					LLRW						
28, 29	276	06-D28-32-1J	SD	RCP	15	2	5.2	1	4.2	LLRW						
		06-D28-32-1N	SD	VCP	10					RSY						
		06-D28-32-1O	SD	VCP	10					RSY						
		06-D28-32-1P	SD	VCP	8					RSY						
		06-D28-32-1Q	SD	VCP	8					RSY						
		06-D28-32-2E	SS	VCP	8					RSY						
		06-D28-32-2F	SS	Metal	5					LLRW						
		06-D28-32-2G	SS	Metal	5					LLRW						
				06-D29-00-2B	SD					VCP	8					RSY
		24, 28	277	06-D24-00-9A	SD					VCP	8	3	5	2	4	RSY
06-D24-32-9A	SD			VCP	8	RSY										
06-D24-32-9B	SD			VCP	10	RSY										
06-D28-32-1D	SD			VCP	10	RSY										
24, 28	278	06-D24-32-9C	SD	Metal	1.5	2	7	1	6	LLRW						
		06-D28-00-5A	SD	Metal	10					LLRW						
		06-D28-32-1A	SD	RCP	42					LLRW						
		06-D28-32-1B	SD	Metal	1.5					LLRW						
		06-D28-32-1E	SD	VCP	8					RSY						
28	279	06-D28-32-1K	SD	RCP	12	4.5	6.3	3.5	5.3	LLRW						
		06-D28-32-1S	SD	VCP	10					RSY						
		06-D28-32-1T	SD	VCP	8					RSY						
		06-D28-32-1W	SS	VCP	6					RSY						
		06-D28-32-2I	SD	VCP	6					RSY						

Table 6
Parcel D-1 Trench Survey Units and Associated Trench Segment Data

WA	Trench Survey Unit	Trench Segment ID No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Minimum Depth of Trench (feet bgs)	Maximum Depth of Trench (feet bgs)	Minimum Depth of Pipe (feet bgs)	Maximum Depth of Pipe (feet bgs)	Final Disposition
28	280	06-D28-70-3A	SD	VCP	4	3.5	6.5	2.5	5.5	RSY
		06-D28-70-3B	SD	VCP	4					RSY
		06-D28-32-3B	SD	VCP	4					RSY
		06-D28-32-1T	SD	VCP	8					RSY
		06-D28-32-1U	SD	VCP	4					RSY
		06-D28-32-1V	SD	VCP	4					RSY
		06-D28-32-1X	SD	VCP	12					RSY
28	281	06-D28-32-1W	SS	VCP	6	2.5	5	1.5	4	RSY
		06-D28-32-2I	SD	VCP	6					RSY
28	282	06-D28-00-6A	SS	Metal	4	2	2	1	1	LLRW
25	283	06-D25-00-1A	SD	VCP	10	3	5	2	4	RSY
		06-D25-00-2A	SD	VCP	6					RSY
		06-D25-00-2B	SD	VCP	10					RSY
		06-D25-00-2C	SD	VCP	10					RSY
		06-D25-00-3A	SD	VCP	10					RSY

Notes:

Crushed and disintegrated piping was transferred with excavated soil to the RSY for radiological processing.

CIP - cast iron pipe

CMP - corrugated metal pipe

LLRW - low-level radioactive waste

N/A - not applicable

RCP - reinforced concrete pipe

RSY - radiological screening yard

SD - storm drain

SS - sanitary sewer

VCP - vitrified clay pipe

WA - work area

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/03/10	24	250	06-D24-00-6A-001	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-002	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-003	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-004	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-005	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-006	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-007	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-008	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-009	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/03/10	24	250	06-D24-00-6A-010	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/04/10	24	250	06-D24-00-6A-011	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/04/10	24	250	06-D24-00-6A-012	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/05/10	24	250	06-D24-00-6A-040	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	250	06-D24-00-6A-041	N/A	06-D24-00-6A	2	C12	357	Yes	Backfill
11/05/10	24	250	MH727-001	N/A	MH727	2	C12	357	Yes	Backfill
11/05/10	24	250	MH727-002	N/A	MH728	2	C12	357	Yes	Backfill
11/05/10	24	250	MH727-003	N/A	MH729	2	C12	357	Yes	Backfill
11/05/10	24	250	MH727-004	N/A	MH730	2	C12	357	Yes	Backfill
11/05/10	24	250	MH727-005	N/A	MH731	2	C12	357	Yes	Backfill
1/17/11	24	250	06-D24-00-6B-001	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/17/11	24	250	06-D24-00-6B-002	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/17/11	24	250	06-D24-00-6B-003	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/17/11	24	250	06-D24-00-6B-004	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/17/11	24	250	06-D24-00-6B-005	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/18/11	24	250	06-D24-48-6D-001	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/18/11	24	250	06-D24-48-6D-002	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/18/11	24	250	06-D24-48-6D-003	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/18/11	24	250	06-D24-48-6D-004	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/18/11	24	250	06-D24-48-6D-005	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/18/11	24	250	06-D24-48-6D-006	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/18/11	24	250	06-D24-48-6C-001	48	06-D24-48-6C	2	C15	389	Yes	Backfill
1/18/11	24	250	06-D24-00-6B-006	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
1/18/11	24	250	06-D24-00-6B-007	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/18/11	24	250	06-D24-00-6B-008	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/18/11	24	250	06-D24-00-6B-009	N/A	06-D24-00-6B	2	C11	384	Yes	Backfill
1/19/11	24	250	06-D24-48-6D-007	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/19/11	24	250	06-D24-48-6D-008	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/19/11	24	250	06-D24-48-6D-009	48	06-D24-48-6D	2	C15	389	Yes	Backfill
1/19/11	24	250	06-D24-48-6D-010	48	06-D24-48-6D	2	C15	389	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-013	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-014	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-015	N/A	06-D24-00-6A	2	C10	354	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-016	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-017	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-018	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-019	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-020	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-021	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/04/10	24	251	06-D24-00-6A-022	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-023	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-024	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-025	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-026	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-027	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-028	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-029	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-030	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-031	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-032	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-033	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-034	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-035	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-036	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-037	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/05/10	24	251	06-D24-00-6A-038	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/05/10	24	251	06-D24-00-6A-039	N/A	06-D24-00-6A	2	C11	356	Yes	Backfill
11/04/10	24	252	06-D24-MH730-001	N/A	MH730	2	C10	354	Yes	Backfill
11/04/10	24	252	06-D24-MH730-002	N/A	MH730	2	C10	354	Yes	Backfill
11/04/10	24	252	06-D24-MH730-003	N/A	MH730	2	C10	354	Yes	Backfill
11/08/10	24	252	06-D24-00-6E-017	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	252	06-D24-00-6E-018	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	252	06-D24-00-6E-019	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/09/10	24	252	06-D24-00-6E-020	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6E-030	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6E-031	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6E-032	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6E-033	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6K-001	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6K-002	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6K-003	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6K-004	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/09/10	24	252	06-D24-00-6K-005	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/10/10	24	252	06-D24-00-6K-006	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/11/10	24	252	06-D24-00-6K-037	N/A	06-D24-00-6K	2	C19	360	Yes	Backfill
11/11/10	24	252	06-D24-00-6K-038	N/A	06-D24-00-6K	2	C19	360	Yes	Backfill
11/11/10	24	252	06-D24-00-6K-039	N/A	06-D24-00-6K	2	C19	360	Yes	Backfill
11/11/10	24	252	06-D24-00-6K-040	N/A	06-D24-00-6K	2	C19	360	Yes	Backfill
11/11/10	24	252	06-D24-00-6N-001	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	252	06-D24-00-6N-002	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	252	06-D24-00-6N-003	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	252	06-D24-00-6N-004	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
1/17/11	24	252	06-D24-00-6H-001	N/A	06-D24-00-6H	2	C11	384	Yes	Backfill
1/17/11	24	252	06-D24-00-6H-002	N/A	06-D24-00-6H	2	C11	384	Yes	Backfill
1/17/11	24	252	06-D24-00-6H-003	N/A	06-D24-00-6H	2	C11	384	Yes	Backfill
1/17/11	24	252	06-D24-00-6H-004	N/A	06-D24-00-6H	2	C11	384	Yes	Backfill
1/19/11	24	252	06-D24-48-6F-001	48	06-D24-48-6F	2	C15	389	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
1/19/11	24	252	06-D24-48-6F-002	48	06-D24-48-6F	2	C21	393	No	LLRW
1/19/11	24	252	06-D24-48-6F-003	48	06-D24-48-6F	2	C15	389	Yes	Backfill
1/19/11	24	252	06-D24-00-6I-001	N/A	06-D24-00-6I	2	C11	384	Yes	Backfill
1/19/11	24	252	06-D24-00-6I-002	N/A	06-D24-00-6I	2	C11	384	Yes	Backfill
1/19/11	24	252	06-D24-00-6I-003	N/A	06-D24-00-6I	2	C11	384	Yes	Backfill
1/19/11	24	252	06-D24-00-6I-004	N/A	06-D24-00-6I	2	C11	384	Yes	Backfill
1/19/11	24	252	06-D24-00-6I-005	N/A	06-D24-00-6I	2	C20	394	Yes	Backfill
1/19/11	24	252	06-D24-00-6I-006	N/A	06-D24-00-6I	2	C20	394	Yes	Backfill
1/20/11	24	252	06-D24-00-6L-001	N/A	06-D24-00-6L	2	C20	394	Yes	Backfill
1/20/11	24	252	06-D24-00-6L-002	N/A	06-D24-00-6L	2	C20	394	Yes	Backfill
1/20/11	24	252	06-D24-00-6L-003	N/A	06-D24-00-6L	2	C20	394	Yes	Backfill
1/21/11	24	252	06-D24-00-8C-001	N/A	06-D24-00-8C	2	C20	394	Yes	Backfill
1/21/11	24	252	06-D24-00-8C-002	N/A	06-D24-00-8C	2	C20	394	Yes	Backfill
1/21/11	24	252	06-D24-00-8C-003	N/A	06-D24-00-8C	2	C20	394	Yes	Backfill
1/21/11	24	252	06-D24-00-8C-004	N/A	06-D24-00-8C	2	C20	394	Yes	Backfill
1/25/11	24	252	06-D24-32-7A-001	32	06-D24-32-7A	2	C30	368	No	LLRW
1/25/11	24	252	06-D24-32-7A-002	32	06-D24-32-7A	2	C30	368	No	LLRW
1/25/11	24	252	06-D24-32-8A-001	32	06-D24-32-8A	2	C30	368	No	LLRW
1/25/11	24	252	06-D24-32-8A-002	32	06-D24-32-8A	2	C30	368	No	LLRW
1/25/11	24	252	06-D24-32-8A-003	32	06-D24-32-8A	2	C30	368	No	LLRW
1/25/11	24	252	06-D24-32-8A-004	32	06-D24-32-8A	2	C31	369	No	LLRW
1/25/11	24	252	06-D24-32-8A-005	32	06-D24-32-8A	2	C30	368	No	LLRW
1/25/11	24	252	06-D24-32-8A-006	32	06-D24-32-8A	2	C30	368	No	LLRW
11/08/10	24	253	06-D24-00-6E-001	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-002	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-003	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-004	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-005	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-006	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-007	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-008	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-009	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/08/10	24	253	06-D24-00-6E-010	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-011	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-012	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-013	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-014	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-015	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
11/08/10	24	253	06-D24-00-6E-016	N/A	06-D24-00-6E	2	C12	357	Yes	Backfill
2/22/11	24	254	06-D24-35-4G-001	35	06-D24-35-4G	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2F-045	35	06-D24-35-2F	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2F-046	35	06-D24-35-2F	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2F-047	35	06-D24-35-2F	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2F-048	35	06-D24-35-2F	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2F-049	35	06-D24-35-2F	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2F-050	35	06-D24-35-2F	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2F-051	35	06-D24-35-2F	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-001	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-002	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-003	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-004	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-005	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-006	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-007	35	06-D24-35-2A	2	C14	419	No	LLRW
2/22/11	24	254	06-D24-35-2A-008	35	06-D24-35-2A	2	C14	419	No	LLRW
2/22/11	24	254	06-D24-35-2A-009	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-010	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-011	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-012	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-013	35	06-D24-35-2A	2	C13	418	No	LLRW
2/22/11	24	254	06-D24-35-2A-014	35	06-D24-35-2A	2	C13	418	No	LLRW
2/23/11	24	254	06-D24-35-2A-015	35	06-D24-35-2A	2	C13	418	No	LLRW
2/23/11	24	254	06-D24-35-2A-016	35	06-D24-35-2A	2	C13	418	No	LLRW
2/23/11	24	254	06-D24-35-2A-017	35	06-D24-35-2A	2	C13	418	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
2/23/11	24	254	06-D24-35-2A-018	35	06-D24-35-2A	2	C13	418	No	LLRW
2/23/11	24	254	06-D24-35-2A-019	35	06-D24-35-2A	2	C13	418	No	LLRW
2/23/11	24	254	06-D24-35-2A-020	35	06-D24-35-2A	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2A-021	35	06-D24-35-2A	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2A-022	35	06-D24-35-2A	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2A-023	35	06-D24-35-2A	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2A-024	35	06-D24-35-2A	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-001	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-002	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-003	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-004	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-005	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-006	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-007	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2B-008	35	06-D24-35-2B	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2D-001	35	06-D24-35-2D	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2D-002	35	06-D24-35-2D	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2E-001	35	06-D24-35-2E	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2E-002	35	06-D24-35-2E	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2E-003	35	06-D24-35-2E	2	C16	420	No	LLRW
2/23/11	24	254	06-D24-35-2E-004	35	06-D24-35-2E	2	C16	420	No	LLRW
9/15/11	24	254	06-D24-35-4G-002	35	06-D24-35-4G	3	D03	590	No	LLRW
9/15/11	24	254	06-D24-35-4G-003	35	06-D24-35-4G	3	D03	590	No	LLRW
9/15/11	24	254	06-D24-35-4G-004	35	06-D24-35-4G	3	D03	590	No	LLRW
9/15/11	24	254	06-D24-35-4G-005	35	06-D24-35-4G	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2F-058	35	06-D24-35-2F	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2F-059	35	06-D24-35-2F	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2F-060	35	06-D24-35-2F	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2F-061	35	06-D24-35-2F	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-025	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-026	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-027	35	06-D24-35-2A	3	D03	590	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/16/11	24	254	06-D24-35-2A-028	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-029	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-030	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-031	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-032	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-033	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-034	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-035	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-036	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-037	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-038	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-039	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-040	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-041	35	06-D24-35-2A	3	D03	590	No	LLRW
9/16/11	24	254	06-D24-35-2A-042	35	06-D24-35-2A	3	D04	591	No	LLRW
9/16/11	24	254	06-D24-35-2A-043	35	06-D24-35-2A	3	D04	591	No	LLRW
9/16/11	24	254	06-D24-35-2A-044	35	06-D24-35-2A	3	D04	591	No	LLRW
9/16/11	24	254	06-D24-35-2A-045	35	06-D24-35-2A	3	D04	591	No	LLRW
11/09/10	24	255	06-D24-00-6E-021	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/08/10	24	255	06-D24-00-6E-022	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	255	06-D24-00-6E-023	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	255	06-D24-00-6E-024	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	255	06-D24-00-6E-025	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	255	06-D24-00-6E-026	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	255	06-D24-00-6E-027	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	255	06-D24-00-6E-028	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
11/09/10	24	255	06-D24-00-6E-029	N/A	06-D24-00-6E	2	C21	358	Yes	Backfill
10/18/10	24	256	06-D24-35-2H-001	35	06-D24-35-2H	2	C07	349	No	LLRW
10/18/10	24	256	06-D24-35-2H-002	35	06-D24-35-2H	2	C07	349	No	LLRW
10/19/10	24	256	06-D24-35-2H-003	35	06-D24-35-2H	2	C07	349	No	LLRW
10/19/10	24	256	06-D24-35-2H-004	35	06-D24-35-2H	2	C17	352	No	LLRW
10/20/10	24	256	06-D24-35-2H-005	35	06-D24-35-2H	2	C17	352	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/21/12	24	256	06-D24-35-2H-006	35	06-D24-35-2H	4	E10	660	No	LLRW
3/22/12	24	256	06-D24-35-2H-007	35	06-D24-35-2H	4	E10	660	No	LLRW
3/22/12	24	256	06-D24-35-2H-008	35	06-D24-35-2H	4	E10	660	No	LLRW
3/22/12	24	256	06-D24-35-2H-009	35	06-D24-35-2H	4	E10	660	No	LLRW
11/10/10	24	257	06-D24-00-6K-007	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-008	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-009	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-010	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-011	N/A	06-D24-00-6K	2	C21	358	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-012	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-013	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-014	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-015	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-016	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-017	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-018	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-019	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-020	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-021	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-022	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-023	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-024	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-025	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-026	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-027	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-028	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-029	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-030	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-031	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-032	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-033	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-034	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/10/10	24	257	06-D24-00-6K-035	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
11/10/10	24	257	06-D24-00-6K-036	N/A	06-D24-00-6K	2	C20	359	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-001	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-002	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-003	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-004	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-005	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-006	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-007	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-008	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-009	N/A	06-D29-00-15A	2	C09	412	Yes	Backfill
2/8/11	29	258	06-D29-00-15A-010	N/A	06-D29-00-15A	2	C10	413	No	LLRW
2/8/11	29	258	06-D29-00-15A-011	N/A	06-D29-00-15A	2	C10	413	No	LLRW
2/28/11	28	258	06-D28-32-4A-001	32	06-D28-32-4A	2	C37	406	No	LLRW
2/28/11	28	258	06-D28-32-4A-002	32	06-D28-32-4A	2	C37	406	No	LLRW
2/28/11	28	258	06-D28-32-4A-003	32	06-D28-32-4A	2	C37	406	No	LLRW
2/28/11	28	258	06-D28-32-4A-004	32	06-D28-32-4A	2	C37	406	No	LLRW
2/28/11	28	258	06-D28-32-4A-005	32	06-D28-32-4A	2	C37	406	No	LLRW
2/28/11	28	258	06-D28-32-4A-006	32	06-D28-32-4A	2	C37	406	No	LLRW
2/28/11	28	258	06-D28-32-4A-007	32	06-D28-32-4A	2	C37	406	No	LLRW
11/11/10	24	259	06-D24-00-6N-005	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-006	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-007	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-008	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-009	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-010	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-011	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-012	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-013	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-014	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-015	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-016	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/11/10	24	259	06-D24-00-6N-017	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-018	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-019	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-020	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-021	N/A	06-D24-00-6N	2	C19	360	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-022	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-023	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-024	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-025	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/11/10	24	259	06-D24-00-6N-026	N/A	06-D24-00-6N	2	C09	355	No	LLRW
11/11/10	24	259	06-D24-00-6N-027	N/A	06-D24-00-6N	2	C09	355	No	LLRW
11/11/10	24	259	06-D24-00-6N-028	N/A	06-D24-00-6N	2	C09	355	No	LLRW
11/11/10	24	259	06-D24-00-6N-029	N/A	06-D24-00-6N	2	C09	355	No	LLRW
11/11/10	24	259	06-D24-00-6N-030	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-031	N/A	06-D24-00-6N	2	C09	355	No	LLRW
11/12/10	24	259	06-D24-00-6N-032	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-033	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-034	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-035	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-036	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-037	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-038	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-039	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-040	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-041	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-042	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-043	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-044	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-045	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-046	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-047	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-048	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/12/10	24	259	06-D24-00-6N-049	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-050	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-051	N/A	06-D24-00-6N	2	C22	361	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-052	N/A	06-D24-00-6N	2	C24	362	Yes	Backfill
11/12/10	24	259	06-D24-00-6N-053	N/A	06-D24-00-6N	2	C24	362	Yes	Backfill
10/18/10	30	260	MH-725-001	N/A	MH725	2	C14	351	No	LLRW
10/18/10	30	260	MH-725-002	N/A	MH725	2	C14	351	No	LLRW
10/19/10	30	260	MH-725-003	N/A	MH725	2	C14	351	No	LLRW
10/19/10	30	260	MH-726-001	N/A	MH726	2	C14	351	No	LLRW
10/19/10	30	260	MH-726-002	N/A	MH726	2	C14	351	No	LLRW
10/19/10	30	260	MH-721-001	N/A	MH721	2	C14	351	No	LLRW
10/19/10	30	260	MH-721-002	N/A	MH721	2	C14	351	No	LLRW
10/19/10	30	260	MH-723-001	N/A	MH723	2	C14	351	No	LLRW
10/19/10	30	260	MH-723-002	N/A	MH723	2	C14	351	No	LLRW
10/19/10	30	260	MH-723-003	N/A	MH723	2	C14	351	No	LLRW
10/20/10	30	260	06-D30-00-4A-001	N/A	06-D30-00-4A	2	C14	351	No	LLRW
10/20/10	30	260	06-D30-00-4A-002	N/A	06-D30-00-4A	2	C14	351	No	LLRW
10/20/10	30	260	06-D30-00-4A-003	N/A	06-D30-00-4A	2	C14	351	No	LLRW
10/20/10	30	260	06-D30-00-4A-004	N/A	06-D30-00-4A	2	C14	351	No	LLRW
10/20/10	30	260	MH-719-001	N/A	MH719	2	C14	351	No	LLRW
10/20/10	30	260	MH-719-002	N/A	MH719	2	C14	351	No	LLRW
10/20/10	30	260	MH-719-003	N/A	MH719	2	C14	351	No	LLRW
10/21/10	30	260	MH-718-001	N/A	MH718	2	C14	351	No	LLRW
10/21/10	30	260	MH-718-002	N/A	MH718	2	C14	351	No	LLRW
10/21/10	30	260	MH-718-003	N/A	MH718	2	C14	351	No	LLRW
10/21/10	30	260	MH-717-001	N/A	MH717	2	C14	351	No	LLRW
10/21/10	30	260	MH-717-002	N/A	MH717	2	C14	351	No	LLRW
10/21/10	30	260	MH-716-001	N/A	MH716	2	C14	351	No	LLRW
10/21/10	30	260	MH-715-001	N/A	MH715	2	C14	351	No	LLRW
10/22/10	30	260	06-D30-00-1A-001	N/A	06-D30-00-1A	2	C18	353	No	LLRW
10/25/10	30	260	06-D30-00-1A-002	N/A	06-D30-00-1A	2	C18	353	No	LLRW
10/25/10	30	260	06-D30-00-1A-003	N/A	06-D30-00-1A	2	C18	353	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/26/10	30	260	06-D30-00-1A-004	N/A	06-D30-00-1A	2	C18	353	No	LLRW
11/29/10	24	261	06-D24-00-6O-001	N/A	06-D24-00-6O	2	C24	362	Yes	Backfill
11/29/10	24	261	06-D24-00-6O-002	N/A	06-D24-00-6O	2	C24	362	Yes	Backfill
11/29/10	24	261	06-D24-32-6P-001	32	06-D24-32-6P	2	C28	366	No	LLRW
11/29/10	24	261	06-D24-32-6O-001	32	06-D24-32-6O	2	C28	366	No	LLRW
11/29/10	24	261	06-D24-32-6O-002	32	06-D24-32-6O	2	C28	366	No	LLRW
11/29/10	24	261	06-D24-32-6O-003	32	06-D24-32-6O	2	C28	366	No	LLRW
11/29/10	24	261	06-D24-32-6O-004	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-005	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-006	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-007	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-008	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-009	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-010	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-011	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-012	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-013	32	06-D24-32-6O	2	C29	367	No	LLRW
11/29/10	24	261	06-D24-32-6O-014	32	06-D24-32-6O	2	C29	367	No	LLRW
11/30/10	24	261	06-D24-32-6O-015	32	06-D24-32-6O	2	C29	367	No	LLRW
11/30/10	24	261	06-D24-32-6S-001	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-002	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-003	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-004	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-005	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6R-001	32	06-D24-32-6R	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6R-002	32	06-D24-32-6R	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6R-003	32	06-D24-32-6R	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6R-004	32	06-D24-32-6R	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6R-005	32	06-D24-32-6R	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6R-006	32	06-D24-32-6R	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6R-007	32	06-D24-32-6R	2	C29	367	No	LLRW
11/30/10	24	261	06-D24-32-6R-008	32	06-D24-32-6R	2	C29	367	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/30/10	24	261	06-D24-32-6S-006	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-007	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-008	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-009	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-010	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-011	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-012	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-013	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-014	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-015	32	06-D24-32-6S	2	C28	366	No	LLRW
11/30/10	24	261	06-D24-32-6S-016	32	06-D24-32-6S	2	C30	368	No	LLRW
11/30/10	24	261	06-D24-32-6S-017	32	06-D24-32-6S	2	C30	368	No	LLRW
11/30/10	24	261	06-D24-32-6S-018	32	06-D24-32-6S	2	C30	368	No	LLRW
11/30/10	24	261	06-D24-32-6S-019	32	06-D24-32-6S	2	C30	368	No	LLRW
11/30/10	24	261	06-D24-32-6S-020	32	06-D24-32-6S	2	C30	368	No	LLRW
11/30/10	24	261	06-D24-32-6S-021	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-022	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-023	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-024	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-025	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-026	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-027	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-028	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-029	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-030	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-031	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-032	32	06-D24-32-6S	2	C29	367	No	LLRW
12/1/10	24	261	06-D24-32-6S-033	32	06-D24-32-6S	2	C31	369	No	LLRW
12/1/10	24	261	06-D24-32-6S-034	32	06-D24-32-6S	2	C31	369	No	LLRW
12/1/10	24	261	06-D24-32-6S-035	32	06-D24-32-6S	2	C31	369	No	LLRW
12/1/10	24	261	06-D24-32-6S-036	32	06-D24-32-6S	2	C31	369	No	LLRW
12/1/10	24	261	06-D24-32-6S-037	32	06-D24-32-6S	2	C31	369	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
12/1/10	24	261	06-D24-32-6S-038	32	06-D24-32-6S	2	C31	369	No	LLRW
12/1/10	24	261	06-D24-32-6S-039	32	06-D24-32-6S	2	C31	369	No	LLRW
12/1/10	24	261	06-D24-32-6S-040	32	06-D24-32-6S	2	C31	369	No	LLRW
12/1/10	24	261	06-D24-32-6S-041	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-042	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-043	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-044	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-045	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-046	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-047	32	06-D24-32-6S	2	C30	368	No	LLRW
12/1/10	24	261	06-D24-32-6S-048	32	06-D24-32-6S	2	C30	368	No	LLRW
12/2/10	24	261	06-D24-32-6S-049	32	06-D24-32-6S	2	C31	369	No	LLRW
12/2/10	24	261	06-D24-32-6S-050	32	06-D24-32-6S	2	C31	369	No	LLRW
12/2/10	24	261	06-D24-32-6S-051	32	06-D24-32-6S	2	C31	369	No	LLRW
12/2/10	24	261	06-D24-32-6S-052	32	06-D24-32-6S	2	C31	369	No	LLRW
12/2/10	24	261	06-D24-32-6S-053	32	06-D24-32-6S	2	C31	369	No	LLRW
12/2/10	24	261	06-D24-32-6S-054	32	06-D24-32-6S	2	C31	369	No	LLRW
12/2/10	24	261	06-D24-32-6S-055	32	06-D24-32-6S	2	C31	369	No	LLRW
12/2/10	28	262	06-D28-32-1F-001	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-002	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-003	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-004	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-005	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-006	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-007	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-008	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-009	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-010	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-011	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-012	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-013	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-014	32	06-D28-32-1F	2	C32	370	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
12/2/10	28	262	06-D28-32-1F-015	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-016	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-017	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-018	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-019	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-020	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-021	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-022	32	06-D28-32-1F	2	C32	370	No	LLRW
12/2/10	28	262	06-D28-32-1F-023	32	06-D28-32-1F	2	C32	370	No	LLRW
12/3/10	28	262	06-D28-32-1G-001	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-002	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-003	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-004	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-005	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-006	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-007	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-008	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-009	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-010	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-011	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-012	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1G-013	32	06-D28-32-1G	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-001	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-002	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-003	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-004	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-005	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-006	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-007	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-008	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-009	32	06-D28-32-1H	2	C33	371	No	LLRW
12/3/10	28	262	06-D28-32-1H-010	32	06-D28-32-1H	2	C33	371	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
12/3/10	28	262	06-D28-32-1H-011	32	06-D28-32-1H	2	C33	371	No	LLRW
12/7/10	28	262	06-D28-32-1H-012	32	06-D28-32-1H	2	C33	371	No	LLRW
12/7/10	28	262	06-D28-32-1H-013	32	06-D28-32-1H	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1H-014	32	06-D28-32-1H	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1H-015	32	06-D28-32-1H	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1H-016	32	06-D28-32-1H	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1H-017	32	06-D28-32-1H	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1H-018	32	06-D28-32-1H	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1H-019	32	06-D28-32-1H	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-001	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-002	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-003	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-004	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-005	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-006	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-007	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-008	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-009	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-010	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-011	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-012	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-013	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-014	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-015	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-016	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-017	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1I-018	32	06-D28-32-1I	2	C34	372	No	LLRW
12/7/10	28	262	06-D28-32-1M-001	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-002	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-003	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-004	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-005	32	06-D28-32-1M	2	C35	373	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
12/7/10	28	262	06-D28-32-1M-006	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-007	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-008	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-009	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-010	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-011	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-012	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-013	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-014	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-015	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-016	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-017	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-018	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-019	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-020	32	06-D28-32-1M	2	C35	373	No	LLRW
12/7/10	28	262	06-D28-32-1M-021	32	06-D28-32-1M	2	C35	373	No	LLRW
1/26/11	28	262	06-D28-32-1L-001	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-002	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-003	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-004	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-005	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-006	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-007	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-008	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-009	32	06-D28-32-1L	2	C36	401	No	LLRW
1/26/11	28	262	06-D28-32-1L-010	32	06-D28-32-1L	2	C36	401	No	LLRW
1/27/11	28	262	06-D28-32-1L-011	32	06-D28-32-1L	2	C36	401	No	LLRW
1/27/11	28	262	06-D28-32-1L-012	32	06-D28-32-1L	2	C36	401	No	LLRW
1/27/11	28	262	06-D28-32-1L-013	32	06-D28-32-1L	2	C36	401	No	LLRW
1/27/11	28	262	06-D28-32-1L-014	32	06-D28-32-1L	2	C36	401	No	LLRW
1/27/11	28	262	06-D28-32-1L-015	32	06-D28-32-1L	2	C36	401	No	LLRW
1/27/11	28	262	06-D28-32-1L-016	32	06-D28-32-1L	2	C36	401	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
1/27/11	28	262	06-D28-32-1L-017	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-018	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-019	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-020	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-021	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-022	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-023	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-024	32	06-D28-32-1L	2	C36	401	No	LLRW
1/28/11	28	262	06-D28-32-1L-025	32	06-D28-32-1L	2	C35	373	No	LLRW
1/28/11	28	262	06-D28-32-1L-026	32	06-D28-32-1L	2	C35	373	No	LLRW
1/28/11	28	262	06-D28-32-1L-027	32	06-D28-32-1L	2	C35	373	No	LLRW
1/28/11	28	262	06-D28-32-1L-028	32	06-D28-32-1L	2	C35	373	No	LLRW
1/31/11	28	262	06-D28-32-1L-029	32	06-D28-32-1L	2	C37	406	No	LLRW
1/31/11	28	262	06-D28-32-1L-030	32	06-D28-32-1L	2	C37	406	No	LLRW
1/31/11	28	262	06-D28-32-1L-031	32	06-D28-32-1L	2	C37	406	No	LLRW
1/31/11	28	262	06-D28-32-1L-032	32	06-D28-32-1L	2	C37	406	No	LLRW
10/22/10	30	263	06-D30-00-2A-001	N/A	06-D30-00-2A	2	C14	351	No	LLRW
1/4/11	30	263	06-D30-00-3A-001	N/A	06-D30-00-3A	2	C12	374	Yes	Backfill
1/5/11	30	263	06-D30-00-3A-002	N/A	06-D30-00-3A	2	C12	374	Yes	Backfill
1/5/11	30	263	06-D30-00-3A-003	N/A	06-D30-00-3A	2	C12	374	Yes	Backfill
1/6/11	30	263	MH-720-001	N/A	MH720	2	C12	374	Yes	Backfill
1/6/11	30	263	MH-720-002	N/A	MH720	2	C12	374	Yes	Backfill
1/6/11	30	263	MH-720-003	N/A	MH720	2	C12	374	Yes	Backfill
1/6/11	30	263	06-D30-00-6C-001	N/A	06-D30-00-6C	2	C12	374	Yes	Backfill
1/6/11	30	263	06-D30-00-6C-002	N/A	06-D30-00-6C	2	C12	374	Yes	Backfill
1/6/11	30	263	06-D30-00-6C-003	N/A	06-D30-00-6C	2	C12	374	Yes	Backfill
1/6/11	30	263	06-D30-00-6B-001	N/A	06-D30-00-6B	2	C12	374	Yes	Backfill
1/7/11	30	263	06-D30-00-6B-002	N/A	06-D30-00-6B	2	C12	374	Yes	Backfill
1/7/11	30	263	06-D30-00-6B-003	N/A	06-D30-00-6B	2	C12	374	Yes	Backfill
1/7/11	30	263	06-D30-00-6B-004	N/A	06-D30-00-6B	2	C12	374	Yes	Backfill
1/10/11	30	263	06-D30-00-6A-001	N/A	06-D30-00-6A	2	C18	353	No	LLRW
1/11/11	30	263	06-D30-00-2D-001	N/A	06-D30-00-2D	2	C18	353	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
1/11/11	30	263	06-D30-00-2D-002	N/A	06-D30-00-2D	2	C18	353	No	LLRW
1/11/11	30	263	06-D30-00-2D-003	N/A	06-D30-00-2D	2	C18	353	No	LLRW
1/11/11	30	263	06-D30-00-2A-002	N/A	06-D30-00-2A	2	C18	353	No	LLRW
1/11/11	30	263	06-D30-00-2A-003	N/A	06-D30-00-2A	2	C18	353	No	LLRW
1/17/11	30	263	06-D30-00-6C-004	N/A	06-D30-00-6C	2	C12	374	Yes	Backfill
1/17/11	30	263	06-D30-00-6C-005	N/A	06-D30-00-6C	2	C12	374	Yes	Backfill
1/18/11	30	263	06-D30-00-6C-006	N/A	06-D30-00-6C	2	C12	374	Yes	Backfill
10/25/10	24	264	06-D24-00-5D-001	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/25/10	24	264	06-D24-00-5D-002	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/25/10	24	264	06-D24-00-5D-003	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/25/10	24	264	06-D24-00-5D-004	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/25/10	24	264	06-D24-00-5D-005	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/26/10	24	264	06-D24-00-5D-006	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/26/10	24	264	06-D24-00-5D-007	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/26/10	24	264	06-D24-00-5D-008	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/26/10	24	264	06-D24-00-5D-009	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/26/10	24	264	06-D24-00-5D-010	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/26/10	24	264	06-D24-00-5D-011	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/26/10	24	264	06-D24-00-5D-012	N/A	06-D24-00-5D	2	C13	350	Yes	Backfill
10/27/10	24	264	06-D24-00-5D-013	N/A	06-D24-00-5D	2	C10	354	Yes	Backfill
10/27/10	24	264	06-D24-00-5E-001	N/A	06-D24-00-5E	2	C10	354	Yes	Backfill
10/27/10	24	264	06-D24-00-5E-002	N/A	06-D24-00-5E	2	C10	354	Yes	Backfill
10/27/10	24	264	06-D24-00-5E-003	N/A	06-D24-00-5E	2	C10	354	Yes	Backfill
10/27/10	24	264	06-D24-00-5E-004	N/A	06-D24-00-5E	2	C10	354	Yes	Backfill
10/27/10	24	264	06-D24-00-5E-005	N/A	06-D24-00-5E	2	C10	354	Yes	Backfill
10/27/10	24	264	06-D24-00-5E-006	N/A	06-D24-00-5E	2	C10	354	Yes	Backfill
10/27/10	24	264	06-D24-00-5E-007	N/A	06-D24-00-5E	2	C09	355	No	LLRW
10/27/10	24	264	06-D24-00-5D-014	N/A	06-D24-00-5D	2	C09	355	No	LLRW
10/27/10	24	264	06-D24-00-5D-015	N/A	06-D24-00-5D	2	C09	355	No	LLRW
10/27/10	24	264	06-D24-00-5D-016	N/A	06-D24-00-5D	2	C09	355	No	LLRW
11/16/10	24	264	06-D24-00-5F-001	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-002	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/16/10	24	264	06-D24-00-5F-003	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-004	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-005	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-006	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-007	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-008	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-009	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-010	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-011	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-012	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5F-013	N/A	06-D24-00-5F	2	C24	362	Yes	Backfill
11/16/10	24	264	06-D24-00-5E-008	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/16/10	24	264	06-D24-00-5E-009	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/16/10	24	264	06-D24-00-5E-010	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/16/10	24	264	06-D24-00-5E-011	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/16/10	24	264	06-D24-00-5E-012	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/16/10	24	264	06-D24-00-5E-013	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-014	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-015	N/A	06-D24-00-5E	2	C24	362	Yes	Backfill
11/17/10	24	264	06-D24-00-5E-016	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-017	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-018	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-019	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-020	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-021	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5E-022	N/A	06-D24-00-5E	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5C-001	N/A	06-D24-00-5E	2	C24	362	Yes	Backfill
11/17/10	24	264	06-D24-00-5C-002	N/A	06-D24-00-5C	2	C24	362	Yes	Backfill
11/17/10	24	264	06-D24-00-5C-003	N/A	06-D24-00-5C	2	C09	355	No	LLRW
11/17/10	24	264	06-D24-00-5C-004	N/A	06-D24-00-5C	2	C09	355	No	LLRW
11/18/10	24	264	06-D24-00-5C-005	N/A	06-D24-00-5C	2	C24	362	Yes	Backfill
11/18/10	24	264	06-D24-00-5C-006	N/A	06-D24-00-5C	2	C25	363	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/18/10	24	264	06-D24-00-5C-007	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5C-008	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5C-009	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5C-010	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5C-011	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5C-012	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5C-013	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5C-014	N/A	06-D24-00-5C	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5A-001	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5A-002	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5A-003	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5A-004	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/18/10	24	264	06-D24-00-5A-005	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-006	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-007	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-008	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-009	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-010	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-011	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-012	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-013	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-014	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-015	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-016	N/A	06-D24-00-5A	2	C25	363	No	LLRW
11/19/10	24	264	06-D24-00-5A-017	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/19/10	24	264	06-D24-00-5A-018	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-019	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-020	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-021	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-022	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-023	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-024	N/A	06-D24-00-5A	2	C26	364	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/22/10	24	264	06-D24-00-5A-025	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-026	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-027	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-028	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-029	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-030	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-031	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-032	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/22/10	24	264	06-D24-00-5A-033	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5B-001	N/A	06-D24-00-5B	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5B-002	N/A	06-D24-00-5B	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5B-003	N/A	06-D24-00-5B	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5B-004	N/A	06-D24-00-5B	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5B-005	N/A	06-D24-00-5B	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5B-006	N/A	06-D24-00-5B	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5B-007	N/A	06-D24-00-5B	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5A-034	N/A	06-D24-00-5A	2	C26	364	No	LLRW
11/24/10	24	264	06-D24-00-5A-035	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-036	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-037	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-038	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-039	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-040	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-041	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-042	N/A	06-D24-00-5A	2	C27	365	No	LLRW
11/24/10	24	264	06-D24-00-5A-043	N/A	06-D24-00-5A	2	C27	365	No	LLRW
1/12/11	24	264	06-D24-00-5E-023	N/A	06-D24-00-5E	2	C24	362	Yes	Backfill
1/12/11	24	264	06-D24-00-5E-024	N/A	06-D24-00-5E	2	C24	362	Yes	Backfill
1/12/11	24	264	06-D24-00-5E-025	N/A	06-D24-00-5E	2	C24	362	Yes	Backfill
1/12/11	24	264	06-D24-00-5E-026	N/A	06-D24-00-5E	2	C27	365	No	LLRW
1/12/11	24	264	06-D24-00-5E-027	N/A	06-D24-00-5E	2	C24	362	Yes	Backfill
1/12/11	24	264	06-D24-00-5E-028	N/A	06-D24-00-5E	2	C11	384	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
1/12/11	24	264	06-D24-00-5E-029	N/A	06-D24-00-5E	2	C11	384	Yes	Backfill
1/12/11	24	264	06-D24-00-5A-044	N/A	06-D24-00-5A	2	C11	384	Yes	Backfill
1/12/11	24	264	06-D24-00-5A-045	N/A	06-D24-00-5A	2	C11	384	Yes	Backfill
1/12/11	24	264	06-D24-00-5A-046	N/A	06-D24-00-5A	2	C11	384	Yes	Backfill
1/12/11	24	264	06-D24-00-5A-047	N/A	06-D24-00-5A	2	C11	384	Yes	Backfill
1/12/11	24	264	06-D24-00-5A-048	N/A	06-D24-00-5A	2	C11	384	Yes	Backfill
1/12/11	24	264	06-D24-00-5A-049	N/A	06-D24-00-5A	2	C11	384	Yes	Backfill
3/18/11	24	265	06-D24-35-2F-052	35	06-D24-35-2F	2	C16	420	No	LLRW
3/18/11	24	265	06-D24-35-2F-053	35	06-D24-35-2F	2	C16	420	No	LLRW
3/18/11	24	265	06-D24-35-2F-054	35	06-D24-35-2F	2	C16	420	No	LLRW
3/21/11	24	265	06-D24-35-2F-055	35	06-D24-35-2F	2	C16	420	No	LLRW
3/21/11	24	265	06-D24-35-2F-056	35	06-D24-35-2F	2	C16	420	No	LLRW
3/21/11	24	265	06-D24-35-2F-057	35	06-D24-35-2F	2	C16	420	No	LLRW
3/21/11	24	265	06-D24-00-2F-001	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2F-002	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2F-003	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2F-004	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2F-005	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2F-006	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2F-007	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2F-008	N/A	06-D24-00-2F	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2K-001	N/A	06-D24-00-2K	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2K-002	N/A	06-D24-00-2K	2	C20	394	Yes	Backfill
3/21/11	24	265	06-D24-00-2K-003	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/21/11	24	265	06-D24-00-2K-004	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/21/11	24	265	06-D24-00-2K-005	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/21/11	24	265	06-D24-00-2K-006	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/21/11	24	265	06-D24-00-2K-007	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/21/11	24	265	06-D24-00-2K-008	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/21/11	24	265	06-D24-00-2K-009	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/22/11	24	265	06-D24-00-2K-010	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/22/11	24	265	06-D24-00-2K-011	N/A	06-D24-00-2K	2	C27	365	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/22/11	24	265	06-D24-00-2K-012	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/22/11	24	265	06-D24-00-2K-013	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/22/11	24	265	06-D24-00-2K-014	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/22/11	24	265	06-D24-00-2K-015	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/22/11	24	265	06-D24-00-2K-016	N/A	06-D24-00-2K	2	C27	365	No	LLRW
3/22/11	24	265	06-D24-00-2K-017	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2M-001	N/A	06-D24-00-2M	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2M-002	N/A	06-D24-00-2M	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2M-003	N/A	06-D24-00-2M	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2M-004	N/A	06-D24-00-2M	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2M-005	N/A	06-D24-00-2M	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-018	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-019	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-020	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-021	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-022	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-023	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-024	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-025	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-026	N/A	06-D24-00-2K	2	C06	428	No	LLRW
3/23/11	24	265	06-D24-00-2K-027	N/A	06-D24-00-2K	2	C06	428	No	LLRW
4/12/11	24	265	06-D24-00-2M-006	N/A	06-D24-00-2M	2	C20	394	Yes	Backfill
4/12/11	24	265	06-D24-00-2M-007	N/A	06-D24-00-2M	2	C20	394	Yes	Backfill
4/12/11	24	265	06-D24-00-2M-008	N/A	06-D24-00-2M	2	C06	428	No	LLRW
4/12/11	24	265	06-D24-00-2M-009	N/A	06-D24-00-2M	2	C06	428	No	LLRW
9/15/11	24	265	06-D24-00-2F-009	N/A	06-D24-00-2F	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2F-010	N/A	06-D24-00-2F	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2F-011	N/A	06-D24-00-2F	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2F-012	N/A	06-D24-00-2F	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-028	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-029	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-030	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/15/11	24	265	06-D24-00-2K-031	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-032	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-033	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-034	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-035	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
9/15/11	24	265	06-D24-00-2K-036	N/A	06-D24-00-2K	3	D02	589	Yes	Backfill
2/9/11	29	266	06-D29-00-14G-001	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/9/11	29	266	06-D29-00-14G-002	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/9/11	29	266	06-D29-00-14G-003	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/9/11	29	266	06-D29-00-14G-004	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/9/11	29	266	06-D29-00-14G-005	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/28/11	29	266	06-D29-00-14G-006	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/28/11	29	266	06-D29-00-14G-007	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/28/11	29	266	06-D29-00-14G-008	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/28/11	29	266	06-D29-00-14G-009	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/28/11	29	266	06-D29-00-14G-010	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/28/11	29	266	06-D29-00-14G-011	N/A	06-D29-00-14G	2	C09	412	Yes	Backfill
2/28/11	29	266	06-D29-68-14F-001	68	06-D29-68-14F	2	C17	423	No	LLRW
2/28/11	29	266	06-D29-68-14F-002	68	06-D29-68-14F	2	C17	423	No	LLRW
2/28/11	29	266	06-D29-68-14F-003	68	06-D29-68-14F	2	C17	423	No	LLRW
2/28/11	29	266	06-D29-68-14F-004	68	06-D29-68-14F	2	C17	423	No	LLRW
3/1/11	29	266	06-D29-68-14F-005	68	06-D29-68-14F	2	C17	423	No	LLRW
3/1/11	29	266	06-D29-68-14F-006	68	06-D29-68-14F	2	C17	423	No	LLRW
3/1/11	29	266	06-D29-68-14F-007	68	06-D29-68-14F	2	C17	423	No	LLRW
3/1/11	29	266	06-D29-68-14F-008	68	06-D29-68-14F	2	C17	423	No	LLRW
3/1/11	29	266	06-D29-00-14E-001	N/A	06-D29-00-14E	2	C09	412	Yes	Backfill
3/1/11	29	266	06-D29-00-14E-002	N/A	06-D29-00-14E	2	C09	412	Yes	Backfill
3/1/11	29	266	06-D29-00-14E-003	N/A	06-D29-00-14E	2	C09	412	Yes	Backfill
3/1/11	29	266	06-D29-00-14E-004	N/A	06-D29-00-14E	2	C09	412	Yes	Backfill
3/1/11	29	266	06-D29-00-14E-005	N/A	06-D29-00-14E	2	C09	412	Yes	Backfill
3/1/11	29	266	06-D29-00-14E-006	N/A	06-D29-00-14E	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14E-007	N/A	06-D29-00-14E	2	C19	424	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/1/11	29	266	06-D29-00-14E-008	N/A	06-D29-00-14E	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14E-009	N/A	06-D29-00-14E	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-001	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-002	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-003	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-004	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-005	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-006	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-007	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-008	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-009	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/1/11	29	266	06-D29-00-14C-010	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14C-011	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14C-012	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14C-013	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14C-014	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14C-015	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14C-016	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14C-017	N/A	06-D29-00-14C	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14B-001	N/A	06-D29-00-14B	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14B-002	N/A	06-D29-00-14B	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14B-003	N/A	06-D29-00-14B	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14B-004	N/A	06-D29-00-14B	2	C19	424	Yes	Backfill
3/3/11	29	266	06-D29-00-14B-005	N/A	06-D29-00-14B	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-00-14B-006	N/A	06-D29-00-14B	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-00-14B-007	N/A	06-D29-00-14B	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-00-14B-008	N/A	06-D29-00-14B	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-00-14D-001	N/A	06-D29-00-14D	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-00-14D-002	N/A	06-D29-00-14D	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-68-14D-001	68	06-D29-68-14D	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14D-002	68	06-D29-68-14D	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14D-003	68	06-D29-68-14D	2	C17	423	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/4/11	29	266	06-D29-68-14D-004	68	06-D29-68-14D	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14D-005	68	06-D29-68-14D	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14D-006	68	06-D29-68-14D	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14D-007	68	06-D29-68-14D	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-00-14A-001	N/A	06-D29-00-14A	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-00-14A-002	N/A	06-D29-00-14A	2	C22	434	Yes	Backfill
3/4/11	29	266	06-D29-68-14A-001	68	06-D29-68-14A	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14A-002	68	06-D29-68-14A	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14A-003	68	06-D29-68-14A	2	C17	423	No	LLRW
3/4/11	29	266	06-D29-68-14A-004	68	06-D29-68-14A	2	C17	423	No	LLRW
3/8/11	29	267	06-D29-68-11B-001	68	06-D29-68-11B	2	C17	423	No	LLRW
3/8/11	29	267	06-D29-68-11B-002	68	06-D29-68-11B	2	C17	423	No	LLRW
3/8/11	29	267	06-D29-00-11B-001	N/A	06-D29-00-11B	2	C22	434	Yes	Backfill
3/8/11	29	267	06-D29-00-11B-002	N/A	06-D29-00-11B	2	C22	434	Yes	Backfill
3/8/11	29	267	06-D29-00-11B-003	N/A	06-D29-00-11B	2	C22	434	Yes	Backfill
3/8/11	29	267	06-D29-00-11B-004	N/A	06-D29-00-11B	2	C22	434	Yes	Backfill
3/8/11	29	267	06-D29-68-11B-003	68	06-D29-68-11B	2	C17	423	No	LLRW
3/8/11	29	267	06-D29-68-11B-004	68	06-D29-68-11B	2	C17	423	No	LLRW
3/8/11	29	267	06-D29-00-11A-001	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-002	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-003	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-004	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-005	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-006	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-007	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-008	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/8/11	29	267	06-D29-00-11A-009	N/A	06-D29-00-11A	2	C10	413	No	LLRW
3/9/11	29	267	06-D29-00-11A-010	N/A	06-D29-00-11A	2	C22	434	Yes	Backfill
3/9/11	29	267	06-D29-00-11D-001	N/A	06-D29-00-11D	2	C22	434	Yes	Backfill
3/9/11	29	267	06-D29-00-11D-002	N/A	06-D29-00-11D	2	C22	434	Yes	Backfill
3/9/11	29	267	06-D29-00-11D-003	N/A	06-D29-00-11D	2	C22	434	Yes	Backfill
3/9/11	29	267	06-D29-00-11D-004	N/A	06-D29-00-11D	2	C22	434	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/9/11	29	267	06-D29-00-11D-005	N/A	06-D29-00-11D	2	C23	441	No	LLRW
3/9/11	29	267	06-D29-00-11D-006	N/A	06-D29-00-11D	2	C23	441	No	LLRW
3/9/11	29	267	06-D29-00-11D-007	N/A	06-D29-00-11D	2	C23	441	No	LLRW
3/9/11	29	267	06-D29-00-11D-008	N/A	06-D29-00-11D	2	C23	441	No	LLRW
3/9/11	29	267	06-D29-00-9A-001	N/A	06-D29-00-9A	2	C22	434	Yes	Backfill
3/9/11	29	267	06-D29-68-1B-001	68	06-D29-68-1B	2	C17	423	No	LLRW
3/9/11	29	267	06-D29-68-1B-002	68	06-D29-68-1B	2	C17	423	No	LLRW
3/9/11	29	267	06-D29-68-1B-003	68	06-D29-68-1B	2	C21	443	No	LLRW
3/9/11	29	267	06-D29-68-1B-004	68	06-D29-68-1B	2	C21	443	No	LLRW
3/9/11	29	267	06-D29-68-1B-005	68	06-D29-68-1B	2	C21	443	No	LLRW
3/10/11	29	267	06-D29-68-1B-006	68	06-D29-68-1B	2	C21	443	No	LLRW
3/10/11	29	267	06-D29-68-1B-007	68	06-D29-68-1B	2	C21	443	No	LLRW
3/10/11	29	267	06-D29-68-1B-008	68	06-D29-68-1B	2	C21	443	No	LLRW
3/10/11	29	267	06-D29-68-1B-009	68	06-D29-68-1B	2	C21	443	No	LLRW
3/10/11	29	267	06-D29-68-1B-010	68	06-D29-68-1B	2	C21	443	No	LLRW
3/14/11	29	267	06-D29-00-11C-001	N/A	06-D29-00-11C	2	C23	441	No	LLRW
3/14/11	29	267	06-D29-00-11C-002	N/A	06-D29-00-11C	2	C24	444	Yes	Backfill
3/14/11	29	267	06-D29-00-11C-003	N/A	06-D29-00-11C	2	C23	441	No	LLRW
3/14/11	29	267	06-D29-00-11C-004	N/A	06-D29-00-11C	2	C23	441	No	LLRW
3/14/11	29	267	06-D29-00-11C-005	N/A	06-D29-00-11C	2	C24	444	Yes	Backfill
3/14/11	29	267	06-D29-00-11C-006	N/A	06-D29-00-11C	2	C24	444	Yes	Backfill
3/14/11	29	267	06-D29-00-11C-007	N/A	06-D29-00-11C	2	C24	444	Yes	Backfill
3/14/11	29	267	06-D29-00-11C-008	N/A	06-D29-00-11C	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-68-10A-001	68	06-D29-68-10A	2	C21	443	No	LLRW
3/15/11	29	267	06-D29-68-10A-002	68	06-D29-68-10A	2	C21	443	No	LLRW
3/15/11	29	267	06-D29-00-11E-001	N/A	06-D29-00-11E	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-11E-002	N/A	06-D29-00-11E	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-10A-001	N/A	06-D29-00-10A	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-10A-002	N/A	06-D29-00-10A	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-10A-003	N/A	06-D29-00-10A	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-9B-001	N/A	06-D29-00-9B	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-9B-002	N/A	06-D29-00-9B	2	C25	446	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/15/11	29	267	06-D29-00-9B-003	N/A	06-D29-00-9B	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-9B-004	N/A	06-D29-00-9B	2	C25	446	No	LLRW
3/15/11	29	267	06-D29-00-9B-005	N/A	06-D29-00-9B	2	C25	446	No	LLRW
3/16/11	29	267	06-D29-00-9B-006	N/A	06-D29-00-9B	2	C25	446	No	LLRW
3/16/11	29	267	06-D29-00-9B-007	N/A	06-D29-00-9B	2	C25	446	No	LLRW
3/16/11	29	267	06-D29-00-9B-008	N/A	06-D29-00-9B	2	C25	446	No	LLRW
3/10/11	29	268	06-D29-00-1A-001	N/A	06-D29-00-1A	2	C22	434	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-002	N/A	06-D29-00-1A	2	C22	434	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-003	N/A	06-D29-00-1A	2	C22	434	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-004	N/A	06-D29-00-1A	2	C22	434	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-005	N/A	06-D29-00-1A	2	C22	434	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-006	N/A	06-D29-00-1A	2	C22	434	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-007	N/A	06-D29-00-1A	2	C22	434	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-008	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/10/11	29	268	06-D29-00-1A-008	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-010	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-011	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-012	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-013	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-014	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-015	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-016	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-017	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-018	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-019	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-020	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	29	268	06-D29-00-1A-021	N/A	06-D29-00-1A	2	C24	444	Yes	Backfill
3/11/11	28	268	06-D28-32-2H-001	32	06-D28-32-2H	2	C37	406	No	LLRW
3/11/11	28	268	06-D28-32-2H-002	32	06-D28-32-2H	2	C37	406	No	LLRW
3/14/11	29	268	06-D29-00-2A-001	N/A	06-D29-00-2A	2	C24	444	Yes	Backfill
3/14/11	29	268	06-D29-00-2A-002	N/A	06-D29-00-2A	2	C24	444	Yes	Backfill
3/14/11	29	268	06-D29-00-2A-003	N/A	06-D29-00-2A	2	C24	444	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/14/11	28	268	06-D28-32-1R-001	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-002	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-003	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-004	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-2H-003	32	06-D28-32-2H	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-2H-004	32	06-D28-32-2H	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-2H-005	32	06-D28-32-2H	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-005	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-006	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-007	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-008	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-009	32	06-D28-32-1R	2	C37	406	No	LLRW
3/14/11	28	268	06-D28-32-1R-010	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-011	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-012	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-013	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-014	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-015	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-016	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-017	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-018	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-019	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-020	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-021	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-022	32	06-D28-32-1R	2	C28	445	No	LLRW
3/14/11	28	268	06-D28-32-1R-023	32	06-D28-32-1R	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1R-024	32	06-D28-32-1R	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1R-025	32	06-D28-32-1R	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1R-026	32	06-D28-32-1R	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1R-027	32	06-D28-32-1R	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1R-028	32	06-D28-32-1R	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1R-029	32	06-D28-32-1R	2	C28	445	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/15/11	28	268	06-D28-32-1M-022	32	06-D28-32-1M	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1M-023	32	06-D28-32-1M	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1M-024	32	06-D28-32-1M	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1M-025	32	06-D28-32-1M	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1M-026	32	06-D28-32-1M	2	C28	445	No	LLRW
3/15/11	28	268	06-D28-32-1M-027	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-028	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-029	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-030	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-031	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-032	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-033	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-034	32	06-D28-32-1M	2	C26	447	No	LLRW
3/15/11	28	268	06-D28-32-1M-035	32	06-D28-32-1M	2	C26	447	No	LLRW
3/21/11	29	268	06-D29-00-1A-022	N/A	06-D29-00-1A	2	C33	456	Yes	Backfill
3/21/11	29	268	06-D29-00-1A-023	N/A	06-D29-00-1A	2	C33	456	Yes	Backfill
3/10/11	29	269	06-D29-00-12A-001	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-002	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-003	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-004	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-005	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-006	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-007	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-008	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-009	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-010	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-011	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/10/11	29	269	06-D29-00-12A-012	N/A	06-D29-00-12A	2	C10	413	No	LLRW
3/11/11	29	269	06-D29-00-13A-001	N/A	06-D29-00-13A	2	C24	444	Yes	Backfill
3/11/11	29	269	06-D29-00-13A-002	N/A	06-D29-00-13A	2	C24	444	Yes	Backfill
3/11/11	29	269	06-D29-00-13A-003	N/A	06-D29-00-13A	2	C24	444	Yes	Backfill
3/11/11	29	269	06-D29-00-13A-004	N/A	06-D29-00-13A	2	C24	444	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/11/11	29	269	06-D29-00-13A-005	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-006	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-007	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-008	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-009	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-010	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-011	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-012	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-013	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-014	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-015	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-016	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-017	N/A	06-D29-00-13A	2	C23	441	No	LLRW
3/11/11	29	269	06-D29-00-13A-018	N/A	06-D29-00-13A	2	C23	441	No	LLRW
9/19/11	28	270	06-D28-32-2E-016	32	06-D28-32-2E	2	C26	463	No	LLRW
9/19/11	28	270	06-D28-32-2E-017	32	06-D28-32-2E	2	C26	463	No	LLRW
9/19/11	28	270	06-D28-32-2E-018	32	06-D28-32-2E	2	C26	463	No	LLRW
9/19/11	28	270	06-D28-32-2E-019	32	06-D28-32-2E	2	C26	463	No	LLRW
9/19/11	28	270	06-D28-32-2E-020	32	06-D28-32-2E	2	C26	463	No	LLRW
9/19/11	28	270	06-D28-32-2E-021	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-022	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-023	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-024	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-025	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-026	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-027	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-028	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-029	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-030	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-031	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-032	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-033	32	06-D28-32-2E	3	D05	592	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/19/11	28	270	06-D28-32-2E-034	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-035	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-036	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-037	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-038	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-039	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-040	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-041	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-042	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-043	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-044	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-045	32	06-D28-32-2E	3	D05	592	No	LLRW
9/19/11	28	270	06-D28-32-2E-046	32	06-D28-32-2E	3	D06	593	No	LLRW
9/19/11	28	270	06-D28-32-2E-047	32	06-D28-32-2E	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-1E-013	32	06-D28-32-1E	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-1E-014	32	06-D28-32-1E	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-1E-015	32	06-D28-32-1E	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-1E-016	32	06-D28-32-1E	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-1E-017	32	06-D28-32-1E	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-2D-001	32	06-D28-32-2D	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-2D-002	32	06-D28-32-2D	3	D06	593	No	LLRW
9/19/11	28	271	06-D28-32-2D-003	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-004	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-005	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-006	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-007	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-008	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-009	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-010	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-011	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-012	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-013	32	06-D28-32-2D	3	D06	593	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/20/11	28	271	06-D28-32-2D-014	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-015	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-016	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-017	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-018	32	06-D28-32-2D	3	D06	593	No	LLRW
9/20/11	28	271	06-D28-32-2D-019	32	06-D28-32-2D	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-001	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-002	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-003	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-004	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-005	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-006	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-007	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-008	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-009	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-010	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-011	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-012	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-013	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-014	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-015	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-016	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-017	32	06-D28-32-2C	3	D07	595	No	LLRW
9/20/11	28	271	06-D28-32-2C-018	32	06-D28-32-2C	3	D07	595	No	LLRW
9/21/11	28	271	06-D28-32-2C-019	32	06-D28-32-2C	3	D07	595	No	LLRW
9/21/11	28	271	06-D28-32-2C-020	32	06-D28-32-2C	3	D07	595	No	LLRW
9/21/11	28	271	06-D28-32-2C-021	32	06-D28-32-2C	3	D07	595	No	LLRW
9/21/11	28	271	06-D28-32-2C-022	32	06-D28-32-2C	3	D07	595	No	LLRW
9/21/11	28	271	06-D28-32-2C-023	32	06-D28-32-2C	3	D07	595	No	LLRW
9/21/11	28	271	06-D28-32-2C-024	32	06-D28-32-2C	3	D07	595	No	LLRW
9/21/11	28	271	06-D28-32-2C-025	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-026	32	06-D28-32-2C	3	D08	596	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/21/11	28	271	06-D28-32-2C-027	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-028	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-029	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-030	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-031	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-032	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-033	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-034	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-035	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-036	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-037	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-038	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-039	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-040	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-041	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-042	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-043	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-044	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-045	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-046	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-047	32	06-D28-32-2C	3	D08	596	No	LLRW
9/21/11	28	271	06-D28-32-2C-048	32	06-D28-32-2C	3	D08	596	No	LLRW
9/26/11	28	271	06-D28-32-2C-049	32	06-D28-32-2C	3	D08	596	No	LLRW
9/26/11	28	271	06-D28-32-2C-050	32	06-D28-32-2C	3	D09	600	No	LLRW
9/26/11	28	271	06-D28-32-2C-051	32	06-D28-32-2C	3	D09	600	No	LLRW
9/26/11	28	271	06-D28-32-2C-052	32	06-D28-32-2C	3	D09	600	No	LLRW
9/26/11	28	271	06-D28-32-2C-053	32	06-D28-32-2C	3	D09	600	No	LLRW
10/09/10	24	272	06-D24-00-3A-001	N/A	06-D24-00-3A	2	C03	345	Yes	Backfill
10/09/10	24	272	06-D24-35-3A-001	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/09/10	24	272	06-D24-35-3A-002	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/09/10	24	272	06-D24-35-3A-003	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/09/10	24	272	06-D24-35-3A-004	35	06-D24-35-3A	2	C04	N/A	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/09/10	24	272	06-D24-35-3A-005	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/09/10	24	272	06-D24-35-3A-006	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/09/10	24	272	06-D24-35-3A-007	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/09/10	24	272	06-D24-35-3A-008	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/12/10	24	272	06-D24-35-3A-009	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/12/10	24	272	06-D24-35-3A-010	35	06-D24-35-3A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-00-1A-001	N/A	06-D24-00-1A	2	C03	345	Yes	Backfill
10/08/10	24	273	06-D24-00-1A-002	N/A	06-D24-00-1A	2	C03	345	Yes	Backfill
10/08/10	24	273	06-D24-35-1A-001	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-35-1A-002	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-35-1A-003	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-35-1A-004	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-35-1A-005	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-35-1A-006	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-35-1A-007	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/08/10	24	273	06-D24-35-1A-008	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/09/10	24	273	06-D24-35-1A-009	35	06-D24-35-1A	2	C04	N/A	No	LLRW
10/12/10	24	274	06-D24-35-4F-001	35	06-D24-35-4F	2	C04	N/A	No	LLRW
10/12/10	24	274	06-D24-35-4F-002	35	06-D24-35-4F	2	C04	N/A	No	LLRW
10/12/10	24	274	06-D24-35-4F-003	35	06-D24-35-4F	2	C04	N/A	No	LLRW
10/12/10	24	274	06-D24-35-4F-004	35	06-D24-35-4F	2	C04	N/A	No	LLRW
10/12/10	24	274	06-D24-35-4F-005	35	06-D24-35-4F	2	C04	N/A	No	LLRW
10/12/10	24	274	06-D24-35-4F-006	35	06-D24-35-4F	2	C04	N/A	No	LLRW
10/12/10	24	274	06-D24-35-4F-007	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-008	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-009	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-010	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-011	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-012	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-013	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-014	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-015	35	06-D24-35-4F	2	C05	347	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/12/10	24	274	06-D24-35-4F-016	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-017	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-018	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-019	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-020	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-021	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-022	35	06-D24-35-4F	2	C05	347	No	LLRW
10/12/10	24	274	06-D24-35-4F-023	35	06-D24-35-4F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-4F-024	35	06-D24-35-4F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-4F-025	35	06-D24-35-4F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-4F-026	35	06-D24-35-4F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-4F-027	35	06-D24-35-4F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-2F-001	35	06-D24-35-2F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-2F-002	35	06-D24-35-2F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-2F-003	35	06-D24-35-2F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-2F-004	35	06-D24-35-2F	2	C05	347	No	LLRW
10/13/10	24	274	06-D24-35-2F-005	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-006	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-007	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-008	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-009	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-010	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-011	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-012	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-013	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-014	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-015	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-016	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-017	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-018	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-019	35	06-D24-35-2F	2	C06	348	No	LLRW
10/13/10	24	274	06-D24-35-2F-020	35	06-D24-35-2F	2	C06	348	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/14/10	24	274	06-D24-35-2F-021	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-022	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-023	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-024	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-025	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-026	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-027	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-028	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-029	35	06-D24-35-2F	2	C06	348	No	LLRW
10/14/10	24	274	06-D24-35-2F-030	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-031	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-032	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-033	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-034	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-035	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-036	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-037	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-038	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-039	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-35-2F-040	35	06-D24-35-2F	2	C07	349	No	LLRW
10/14/10	24	274	06-D24-00-4A-001	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/14/10	24	274	06-D24-00-4A-002	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/14/10	24	274	06-D24-00-4A-003	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/14/10	24	274	06-D24-00-4B-001	N/A	06-D24-00-4B	2	C03	345	Yes	Backfill
10/14/10	24	274	06-D24-00-4B-002	N/A	06-D24-00-4B	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4B-003	N/A	06-D24-00-4B	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4B-004	N/A	06-D24-00-4B	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4B-005	N/A	06-D24-00-4B	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4B-006	N/A	06-D24-00-4B	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-35-4A-001	35	06-D24-00-4A	2	C07	349	No	LLRW
10/15/10	24	274	06-D24-35-4A-002	35	06-D24-00-4A	2	C07	349	No	LLRW
10/15/10	24	274	06-D24-35-4A-003	35	06-D24-00-4A	2	C07	349	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/15/10	24	274	06-D24-00-4A-004	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-005	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-006	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-007	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-008	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-009	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-010	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-011	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-012	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-013	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-014	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-015	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-016	N/A	06-D24-00-4A	2	C03	345	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-017	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-018	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-019	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-020	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-021	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-022	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-023	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-024	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-025	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-026	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-027	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-028	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/15/10	24	274	06-D24-00-4A-029	N/A	06-D24-00-4A	2	C13	350	Yes	Backfill
10/18/10	24	274	06-D24-35-2F-041	35	06-D24-35-2F	2	C07	349	No	LLRW
10/18/10	24	274	06-D24-35-2F-042	35	06-D24-35-2F	2	C07	349	No	LLRW
10/18/10	24	274	06-D24-35-2F-043	35	06-D24-35-2F	2	C07	349	No	LLRW
10/18/10	24	274	06-D24-35-2F-044	35	06-D24-35-2F	2	C07	349	No	LLRW
10/18/10	24	274	06-D24-35-2G-001	35	06-D24-35-2G	2	C07	349	No	LLRW
10/18/10	24	274	06-D24-35-2G-002	35	06-D24-35-2G	2	C07	349	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/18/10	24	274	06-D24-35-2G-003	35	06-D24-35-2G	2	C07	349	No	LLRW
10/18/10	24	274	06-D24-35-2G-004	35	06-D24-35-2G	2	C07	349	No	LLRW
3/16/11	29	275	06-D29-00-6B-001	N/A	06-D29-00-6B	2	C29	451	No	LLRW
3/16/11	29	275	06-D29-00-8A-001	N/A	06-D29-00-8A	2	C25	446	No	LLRW
3/16/11	29	275	06-D29-00-8A-002	N/A	06-D29-00-8A	2	C25	446	No	LLRW
3/16/11	29	275	06-D29-00-7A-001	N/A	06-D29-00-7A	2	C25	446	No	LLRW
3/16/11	29	275	06-D29-00-7A-002	N/A	06-D29-00-7A	2	C25	446	No	LLRW
3/16/11	29	275	06-D29-00-7A-003	N/A	06-D29-00-7A	2	C25	446	No	LLRW
3/16/11	29	275	06-D29-00-7A-004	N/A	06-D29-00-7A	2	C29	451	No	LLRW
3/16/11	29	275	06-D29-00-5B-001	N/A	06-D29-00-5B	2	C25	446	No	LLRW
3/17/11	29	275	06-D29-00-5B-003	N/A	06-D29-00-5B	2	C25	446	No	LLRW
3/17/11	29	275	06-D29-00-5B-004	N/A	06-D29-00-5B	2	C25	446	No	LLRW
3/17/11	29	275	06-D29-00-16B-001	N/A	06-D29-00-16B	2	C29	451	No	LLRW
3/17/11	29	275	06-D29-00-5A-001	N/A	06-D29-00-5A	2	C29	451	No	LLRW
3/17/11	29	275	06-D29-00-5A-002	N/A	06-D29-00-5A	2	C29	451	No	LLRW
3/17/11	29	275	06-D29-00-5B-005	N/A	06-D29-00-5B	2	C34	453	Yes	Backfill
3/17/11	29	275	06-D29-00-3A-001	N/A	06-D29-00-3A	2	C34	453	Yes	Backfill
3/17/11	29	275	06-D29-00-3A-002	N/A	06-D29-00-3A	2	C34	453	Yes	Backfill
3/18/11	29	275	06-D29-00-3A-003	N/A	06-D29-00-3A	2	C34	453	Yes	Backfill
3/18/11	29	275	06-D29-00-3A-004	N/A	06-D29-00-3A	2	C34	453	Yes	Backfill
3/18/11	29	275	06-D29-00-6B-002	N/A	06-D29-00-6B	2	C34	453	Yes	Backfill
3/18/11	29	275	06-D29-00-3A-005	N/A	06-D29-00-3A	2	C34	453	Yes	Backfill
3/21/11	29	275	06-D29-00-4A-001	N/A	06-D29-00-4A	2	C34	453	Yes	Backfill
3/21/11	29	275	06-D29-00-4A-002	N/A	06-D29-00-4A	2	C33	456	Yes	Backfill
3/21/11	29	275	06-D29-00-4A-003	N/A	06-D29-00-4A	2	C33	456	Yes	Backfill
3/21/11	29	275	06-D29-00-4A-004	N/A	06-D29-00-4A	2	C29	451	No	LLRW
3/21/11	29	275	06-D29-00-4A-005	N/A	06-D29-00-4A	2	C33	456	Yes	Backfill
3/21/11	29	275	06-D29-00-4A-006	N/A	06-D29-00-4A	2	C29	451	No	LLRW
3/21/11	29	275	06-D29-00-4A-007	N/A	06-D29-00-4A	2	C29	451	No	LLRW
3/21/11	29	275	06-D29-00-6B-003	N/A	06-D29-00-6B	2	C33	456	Yes	Backfill
3/21/11	29	275	06-D29-00-6B-004	N/A	06-D29-00-6B	2	C33	456	Yes	Backfill
3/22/11	29	275	06-D29-00-6D-001	N/A	06-D29-00-6D	2	C33	456	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/22/11	29	275	06-D29-00-6D-002	N/A	06-D29-00-6D	2	C33	456	Yes	Backfill
3/22/11	29	275	06-D29-00-6D-003	N/A	06-D29-00-6D	2	C33	456	Yes	Backfill
3/22/11	29	275	06-D29-00-6D-004	N/A	06-D29-00-6D	2	C33	456	Yes	Backfill
3/22/11	29	275	06-D29-00-6A-001	N/A	06-D29-00-6A	2	C33	456	Yes	Backfill
3/22/11	29	275	06-D29-00-6A-002	N/A	06-D29-00-6A	2	C33	456	Yes	Backfill
3/22/11	29	275	06-D29-00-6A-003	N/A	06-D29-00-6A	2	C33	456	Yes	Backfill
3/22/11	29	275	06-D29-00-6A-004	N/A	06-D29-00-6A	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-001	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-002	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-003	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-004	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-005	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-006	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-007	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6C-008	N/A	06-D29-00-6C	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6A-005	N/A	06-D29-00-6A	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6A-006	N/A	06-D29-00-6A	2	C33	456	Yes	Backfill
3/23/11	29	275	06-D29-00-6A-007	N/A	06-D29-00-6A	2	C04	430	Yes	Backfill
3/23/11	29	275	06-D29-00-6A-008	N/A	06-D29-00-6A	2	C04	430	Yes	Backfill
3/23/11	29	275	06-D29-00-6A-009	N/A	06-D29-00-6A	2	C04	430	Yes	Backfill
3/23/11	29	275	06-D29-00-6A-010	N/A	06-D29-00-6A	2	C04	430	Yes	Backfill
3/15/11	28	276	06-D28-32-1N-001	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-002	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-003	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-004	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-005	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-006	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-007	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-008	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-009	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-010	32	06-D28-32-1N	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1N-011	32	06-D28-32-1N	2	C26	447	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/16/11	28	276	06-D28-32-1Q-001	32	06-D28-32-1Q	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1Q-002	32	06-D28-32-1Q	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1Q-003	32	06-D28-32-1Q	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1Q-004	32	06-D28-32-1Q	2	C26	447	No	LLRW
3/16/11	28	276	06-D28-32-1Q-005	32	06-D28-32-1Q	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1Q-006	32	06-D28-32-1Q	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1Q-007	32	06-D28-32-1Q	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1Q-008	32	06-D28-32-1Q	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1Q-009	32	06-D28-32-1Q	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1Q-010	32	06-D28-32-1Q	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1O-001	32	06-D28-32-1O	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1O-002	32	06-D28-32-1O	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1O-003	32	06-D28-32-1O	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-001	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-002	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-003	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-004	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-005	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-006	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-007	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-008	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-009	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-011	32	06-D28-32-1P	2	C35	452	No	LLRW
3/16/11	28	276	06-D28-32-1P-012	32	06-D28-32-1P	2	C35	452	No	LLRW
3/17/11	28	276	06-D28-32-1P-010	32	06-D28-32-1P	2	C35	452	No	LLRW
3/17/11	29	276	06-D29-00-2B-001	N/A	06-D29-00-2B	2	C25	446	No	LLRW
3/17/11	29	276	06-D29-00-2B-002	N/A	06-D29-00-2B	2	C25	446	No	LLRW
3/17/11	29	276	06-D29-00-2B-003	N/A	06-D29-00-2B	2	C25	446	No	LLRW
3/17/11	29	276	06-D29-00-2B-004	N/A	06-D29-00-2B	2	C25	446	No	LLRW
3/17/11	29	276	06-D29-00-2B-005	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-006	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-007	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/17/11	29	276	06-D29-00-2B-008	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-009	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-010	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-011	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-012	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-013	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-014	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-015	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-016	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-017	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-018	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-019	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-020	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/17/11	29	276	06-D29-00-2B-021	N/A	06-D29-00-2B	2	C34	453	Yes	Backfill
3/21/11	28	276	06-D28-32-2G-001	32	06-D28-32-2G	2	C35	452	No	LLRW
3/21/11	28	276	06-D28-32-2G-002	32	06-D28-32-2G	2	C35	452	No	LLRW
3/21/11	28	276	06-D28-32-2G-003	32	06-D28-32-2G	2	C35	452	No	LLRW
3/21/11	28	276	06-D28-32-2E-001	32	06-D28-32-2E	2	C35	452	No	LLRW
3/21/11	28	276	06-D28-32-2E-002	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-003	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-004	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-005	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-006	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-007	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-008	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-009	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-2E-010	32	06-D28-32-2E	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-001	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-002	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-003	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-004	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-005	32	06-D28-32-1J	2	C32	458	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/22/11	28	276	06-D28-32-1J-006	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-007	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-008	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-009	32	06-D28-32-1J	2	C32	458	No	LLRW
3/22/11	28	276	06-D28-32-1J-010	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-011	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-012	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-013	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-014	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-015	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-016	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-017	32	06-D28-32-1J	2	C32	458	No	LLRW
3/23/11	28	276	06-D28-32-1J-018	32	06-D28-32-1J	2	C05	429	No	LLRW
3/31/11	28	276	06-D28-32-2E-011	32	06-D28-32-2E	2	C26	463	No	LLRW
3/31/11	28	276	06-D28-32-2E-012	32	06-D28-32-2E	2	C26	463	No	LLRW
3/31/11	28	276	06-D28-32-2E-013	32	06-D28-32-2E	2	C26	463	No	LLRW
3/31/11	28	276	06-D28-32-2E-014	32	06-D28-32-2E	2	C26	463	No	LLRW
3/31/11	28	276	06-D28-32-2E-015	32	06-D28-32-2E	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-019	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-020	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-021	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-022	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-023	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-024	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-025	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-026	32	06-D28-32-1J	2	C26	463	No	LLRW
4/1/11	28	276	06-D28-32-1J-027	32	06-D28-32-1J	2	C26	463	No	LLRW
3/25/11	24	277	06-D24-00-9A-001	N/A	06-D24-00-9A	2	C06	428	No	LLRW
3/25/11	24	277	06-D24-00-9A-002	N/A	06-D24-00-9A	2	C06	428	No	LLRW
3/25/11	24	277	06-D24-00-9A-003	N/A	06-D24-00-9A	2	C06	428	No	LLRW
3/25/11	24	277	06-D24-32-9A-001	32	06-D24-32-9A	2	C31	369	No	LLRW
3/25/11	24	277	06-D24-32-9A-002	32	06-D24-32-9A	2	C31	369	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/25/11	24	277	06-D24-32-9A-003	32	06-D24-32-9A	2	C31	369	No	LLRW
3/25/11	24	277	06-D24-32-9A-004	32	06-D24-32-9A	2	C31	369	No	LLRW
3/25/11	24	277	06-D24-32-9A-005	32	06-D24-32-9A	2	C31	369	No	LLRW
3/28/11	24	277	06-D24-32-9A-006	32	06-D24-32-9A	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9A-007	32	06-D24-32-9A	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-001	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-002	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-003	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-004	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-005	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-006	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-007	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-008	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-009	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-010	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-011	32	06-D24-32-9B	2	C03	431	No	LLRW
3/28/11	24	277	06-D24-32-9B-012	32	06-D24-32-9B	2	C03	431	No	LLRW
3/29/11	24	277	06-D24-32-9B-013	32	06-D24-32-9B	2	C03	431	No	LLRW
3/29/11	24	277	06-D24-32-9B-014	32	06-D24-32-9B	2	C03	431	No	LLRW
3/29/11	24	277	06-D24-32-9B-015	32	06-D24-32-9B	2	C03	431	No	LLRW
3/29/11	24	277	06-D24-32-9B-016	32	06-D24-32-9B	2	C03	431	No	LLRW
3/29/11	24	277	06-D24-32-9B-017	32	06-D24-32-9B	2	C03	431	No	LLRW
3/29/11	28	277	06-D28-32-1D-001	32	06-D28-32-1D	2	C02	432	No	LLRW
3/29/11	28	277	06-D28-32-1D-002	32	06-D28-32-1D	2	C02	432	No	LLRW
3/29/11	28	277	06-D28-32-1D-003	32	06-D28-32-1D	2	C02	432	No	LLRW
3/29/11	28	277	06-D28-32-1D-004	32	06-D28-32-1D	2	C02	432	No	LLRW
3/29/11	28	277	06-D28-32-1D-005	32	06-D28-32-1D	2	C02	432	No	LLRW
3/29/11	28	278	06-D28-32-1B-001	32	06-D28-32-1B	2	C05	429	No	LLRW
3/29/11	28	278	06-D28-32-1B-002	32	06-D28-32-1B	2	C05	429	No	LLRW
3/29/11	28	278	06-D28-32-1B-003	32	06-D28-32-1B	2	C05	429	No	LLRW
3/29/11	24	278	06-D24-32-9C-001	32	06-D24-32-9C	2	C30	368	No	LLRW
3/30/11	28	278	06-D28-32-1A-001	32	06-D28-32-1A	2	C05	429	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/30/11	28	278	06-D28-32-1A-002	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-003	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-004	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-005	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-006	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-007	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-008	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-009	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-010	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-011	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-012	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-013	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-014	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-015	32	06-D28-32-1A	2	C05	429	No	LLRW
3/30/11	28	278	06-D28-32-1A-016	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-017	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-018	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-019	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-020	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-021	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-022	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-023	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-024	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-025	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-026	32	06-D28-32-1A	2	C01	433	No	LLRW
3/30/11	28	278	06-D28-32-1A-027	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-028	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-029	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-030	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-031	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-032	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-033	32	06-D28-32-1A	2	C01	433	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/31/11	28	278	06-D28-32-1A-034	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-035	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-036	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-037	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1A-038	32	06-D28-32-1A	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1E-001	32	06-D28-32-1E	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1E-002	32	06-D28-32-1E	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1E-003	32	06-D28-32-1E	2	C01	433	No	LLRW
3/31/11	28	278	06-D28-32-1E-004	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-005	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-006	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-007	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-008	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-009	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-010	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-011	32	06-D28-32-1E	2	C26	463	No	LLRW
3/31/11	28	278	06-D28-32-1E-012	32	06-D28-32-1E	2	C26	463	No	LLRW
4/1/11	28	278	06-D28-00-5A-001	00	06-D28-00-5A	2	C14	464	Yes	Backfill
4/1/11	28	278	06-D28-00-5A-002	00	06-D28-00-5A	2	C14	464	Yes	Backfill
4/1/11	28	278	06-D28-00-5A-003	00	06-D28-00-5A	2	C14	464	Yes	Backfill
4/1/11	28	278	06-D28-00-5A-004	00	06-D28-00-5A	2	C14	464	Yes	Backfill
4/1/11	28	278	06-D28-00-5A-005	00	06-D28-00-5A	2	C14	464	Yes	Backfill
4/1/11	28	278	06-D28-00-5A-006	00	06-D28-00-5A	2	C14	464	Yes	Backfill
9/26/11	28	279	06-D28-32-1T-011	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	279	06-D28-32-1T-012	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	279	06-D28-32-1T-013	32	06-D28-32-1T	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-001	32	06-D28-32-1S	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-002	32	06-D28-32-1S	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-003	32	06-D28-32-1S	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-004	32	06-D28-32-1S	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-005	32	06-D28-32-1S	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-006	32	06-D28-32-1S	3	D09	600	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/27/11	28	279	06-D28-32-1S-007	32	06-D28-32-1S	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-008	32	06-D28-32-1S	3	D09	600	No	LLRW
9/27/11	28	279	06-D28-32-1S-009	32	06-D28-32-1S	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1S-010	32	06-D28-32-1S	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1S-011	32	06-D28-32-1S	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1S-012	32	06-D28-32-1S	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1S-013	32	06-D28-32-1S	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1S-014	32	06-D28-32-1S	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-001	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-002	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-003	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-004	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-005	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-006	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-007	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-008	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-009	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-010	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-011	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-012	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-013	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-014	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-015	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-016	32	06-D28-32-1K	3	D04	602	No	LLRW
9/27/11	28	279	06-D28-32-1K-017	32	06-D28-32-1K	3	D04	602	No	LLRW
9/28/11	28	279	06-D28-32-1K-018	32	06-D28-32-1K	3	D04	602	No	LLRW
9/29/11	28	279	06-D28-32-2I-001	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-002	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-003	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-004	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-005	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-006	32	06-D28-32-2I	2	C25	605	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/29/11	28	279	06-D28-32-2I-007	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-008	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-009	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-010	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-011	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-012	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-013	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-014	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-015	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-2I-016	32	06-D28-32-2I	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-1W-001	32	06-D28-32-1W	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-1W-002	32	06-D28-32-1W	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-1W-003	32	06-D28-32-1W	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-1W-004	32	06-D28-32-1W	2	C25	605	No	LLRW
9/29/11	28	279	06-D28-32-1W-005	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-006	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-007	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-008	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-009	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-010	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-011	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-012	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-013	32	06-D28-32-1W	2	C33	606	No	LLRW
9/30/11	28	279	06-D28-32-1W-014	32	06-D28-32-1W	2	C11	608	No	LLRW
9/30/11	28	279	06-D28-32-1W-015	32	06-D28-32-1W	2	C11	608	No	LLRW
9/30/11	28	279	06-D28-32-1W-016	32	06-D28-32-1W	2	C11	608	No	LLRW
9/30/11	28	279	06-D28-32-1W-017	32	06-D28-32-1W	2	C11	608	No	LLRW
9/30/11	28	279	06-D28-32-1W-018	32	06-D28-32-1W	2	C11	608	No	LLRW
9/30/11	28	279	06-D28-32-1W-019	32	06-D28-32-1W	2	C33	606	No	LLRW
9/26/11	28	280	06-D28-32-1T-001	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-002	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-003	32	06-D28-32-1T	3	D09	600	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/26/11	28	280	06-D28-32-1T-004	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-005	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-006	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-007	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-008	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-009	32	06-D28-32-1T	3	D09	600	No	LLRW
9/26/11	28	280	06-D28-32-1T-010	32	06-D28-32-1T	3	D09	600	No	LLRW
9/28/11	28	280	06-D28-32-1U-001	32	06-D28-32-1U	3	D04	602	No	LLRW
9/28/11	28	280	06-D28-32-1U-002	32	06-D28-32-1U	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1U-003	32	06-D28-32-1U	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1U-004	32	06-D28-32-1U	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1U-005	32	06-D28-32-1U	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1U-006	32	06-D28-32-1U	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1U-007	32	06-D28-32-1U	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-001	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-002	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-003	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-004	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-005	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-006	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-007	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-008	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-009	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-010	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-011	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-012	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-013	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-014	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-015	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-016	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-017	32	06-D28-32-1X	2	C22	604	No	LLRW
9/28/11	28	280	06-D28-32-1X-018	32	06-D28-32-1X	2	C22	604	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
9/29/11	28	280	06-D28-32-1X-019	32	06-D28-32-1X	2	C22	604	No	LLRW
9/29/11	28	280	06-D28-32-1X-020	32	06-D28-32-1X	2	C25	605	No	LLRW
9/29/11	28	280	06-D28-32-1X-021	32	06-D28-32-1X	2	C25	605	No	LLRW
9/29/11	28	280	06-D28-32-1X-022	32	06-D28-32-1X	2	C25	605	No	LLRW
9/29/11	28	280	06-D28-32-1X-023	32	06-D28-32-1X	2	C25	605	No	LLRW
9/29/11	28	280	06-D28-32-1X-024	32	06-D28-32-1X	2	C25	605	No	LLRW
9/30/11	28	280	06-D28-70-3A-001	70	06-D28-70-3A	2	C12	609	No	LLRW
9/30/11	28	280	06-D28-70-3A-002	70	06-D28-70-3A	2	C12	609	No	LLRW
9/30/11	28	280	06-D28-70-3A-003	70	06-D28-70-3A	2	C12	609	No	LLRW
9/30/11	28	280	06-D28-70-3A-004	70	06-D28-70-3A	2	C12	609	No	LLRW
9/30/11	28	280	06-D28-70-3A-005	70	06-D28-70-3A	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-001	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-002	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-003	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-004	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-005	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-006	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-007	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-008	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-009	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-010	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-011	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-012	70	06-D28-70-3B	2	C12	609	No	LLRW
10/3/11	28	280	06-D28-70-3B-013	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-70-3B-014	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-70-3B-015	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-70-3B-016	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-70-3B-017	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-70-3B-018	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-70-3B-019	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-70-3B-020	70	06-D28-70-3B	2	C12	609	No	LLRW
10/4/11	28	280	06-D28-32-3B-001	32	06-D28-32-3B	2	C33	606	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/4/11	28	280	06-D28-32-3B-002	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-003	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-004	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-005	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-006	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-007	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-008	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-009	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-010	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-011	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-012	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-013	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-014	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-015	32	06-D28-32-3B	2	C33	606	No	LLRW
10/4/11	28	280	06-D28-32-3B-016	32	06-D28-32-3B	2	C31	611	No	LLRW
10/4/11	28	280	06-D28-32-3B-017	32	06-D28-32-3B	2	C31	611	No	LLRW
10/5/11	28	280	06-D28-32-1V-001	32	06-D28-32-1V	2	C31	611	No	LLRW
10/5/11	28	280	06-D28-32-1V-002	32	06-D28-32-1V	2	C31	611	No	LLRW
10/5/11	28	280	06-D28-32-1V-003	32	06-D28-32-1V	2	C31	611	No	LLRW
10/5/11	28	280	06-D28-32-1V-004	32	06-D28-32-1V	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-017	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-018	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-019	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-020	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-021	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-022	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-023	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-024	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-2I-025	32	06-D28-32-2I	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-1W-020	32	06-D28-32-1W	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-1W-021	32	06-D28-32-1W	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-1W-022	32	06-D28-32-1W	2	C31	611	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
10/5/11	28	281	06-D28-32-1W-023	32	06-D28-32-1W	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-1W-024	32	06-D28-32-1W	2	C31	611	No	LLRW
10/5/11	28	281	06-D28-32-1W-025	32	06-D28-32-1W	2	C31	611	No	LLRW
10/21/11	28	282	06-D28-00-6A-001	N/A	06-D28-00-6A	2	C11	619	Yes	Backfill
11/2/11	25	283	06-D25-00-3A-001	N/A	06-D25-00-3A	2	C28	622	Yes	Backfill
11/2/11	25	283	06-D25-00-3A-002	N/A	06-D25-00-3A	2	C28	622	Yes	Backfill
11/2/11	25	283	06-D25-00-2B-001	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/2/11	25	283	06-D25-00-2B-002	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-003	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-004	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-005	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-006	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-007	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-008	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-009	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2B-010	N/A	06-D25-00-2B	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-001	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-002	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-003	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-004	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-005	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-006	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-007	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-008	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2C-009	N/A	06-D25-00-2C	2	C28	622	Yes	Backfill
11/3/11	25	283	06-D25-00-2A-001	N/A	06-D25-00-2A	2	C28	622	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-002	N/A	06-D25-00-2A	2	C28	622	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-003	N/A	06-D25-00-2A	2	C28	622	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-004	N/A	06-D25-00-2A	2	C28	622	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-005	N/A	06-D25-00-2A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-006	N/A	06-D25-00-2A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-007	N/A	06-D25-00-2A	2	C26	623	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
11/4/11	25	283	06-D25-00-2A-008	N/A	06-D25-00-2A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-009	N/A	06-D25-00-2A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-2A-010	N/A	06-D25-00-2A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-1A-001	N/A	06-D25-00-1A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-1A-002	N/A	06-D25-00-1A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-1A-003	N/A	06-D25-00-1A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-1A-004	N/A	06-D25-00-1A	2	C26	623	Yes	Backfill
11/4/11	25	283	06-D25-00-1A-005	N/A	06-D25-00-1A	2	C26	623	Yes	Backfill
3/28/11	28	Bldg 370	06-D28-32-2F-001	32	06-D28-32-2F	2	C05	429	No	LLRW
3/28/11	28	Bldg 370	06-D28-32-2F-002	32	06-D28-32-2F	2	C05	429	No	LLRW
3/28/11	28	Bldg 370	06-D28-32-2F-003	32	06-D28-32-2F	2	C05	429	No	LLRW
3/28/11	28	Bldg 370	06-D28-32-2F-004	32	06-D28-32-2F	2	C05	429	No	LLRW
3/28/11	28	Bldg 370	06-D28-32-2F-005	32	06-D28-32-2F	2	C05	429	No	LLRW
3/28/11	28	Bldg 370	06-D28-32-2F-006	32	06-D28-32-2F	2	C05	429	No	LLRW
3/29/11	28	Bldg 370	06-D28-32-2F-007	32	06-D28-32-2F	2	C05	429	No	LLRW
3/29/11	29	Bldg 378	06-D29-68-10A-003	68	06-D29-68-10A	2	C21	443	No	LLRW
3/30/11	29	Bldg 378	06-D29-68-10A-004	68	06-D29-68-10A	2	C21	443	No	LLRW
3/30/11	29	Bldg 378	06-D29-68-10A-005	68	06-D29-68-10A	2	C21	443	No	LLRW
3/17/11	30	N/A	SP-Cs-001	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-002	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-003	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-004	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-005	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-006	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-007	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-008	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-009	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-010	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-011	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-012	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-013	N/A	N/A	2	C11	454	No	LLRW
3/17/11	30	N/A	SP-Cs-014	N/A	N/A	2	C11	454	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
3/17/11	30	N/A	SP-Cs-015	N/A	N/A	2	C11	454	No	LLRW
6/11/12	29	N/A	GMP-BLG-380-01	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-02	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-03	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-04	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-05	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-06	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-07	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-08	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-09	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-10	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-11	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-12	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-13	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-14	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-15	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-16	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-17	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-18	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-19	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-20	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-21	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-22	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-23	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-24	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-25	N/A	N/A	3	D01	717	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-26	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-27	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-01	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-02	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-03	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-04	N/A	N/A	3	D02	718	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
6/11/12	29	N/A	GMP-BLG-384-05	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-06	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-07	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-08	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-09	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-10	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-11	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-12	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-13	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-14	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-15	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-384-16	N/A	N/A	3	D02	718	Yes	Backfill
6/11/12	29	N/A	GMP-BLG-380-28	N/A	N/A	3	D02	718	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-01	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-02	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-03	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-04	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-05	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-06	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-07	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-08	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-09	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-10	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-11	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-12	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-13	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-14	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-15	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-16	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-17	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-18	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-00-SU76-19	N/A	N/A	3	D03	746	Yes	Backfill

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
8/8/12	29	N/A	06-D29-00-SU76-20	N/A	N/A	3	D03	746	Yes	Backfill
8/8/12	29	N/A	06-D29-68-SU76-01	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-02	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-03	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-04	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-05	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-06	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-07	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-08	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-09	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-10	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-11	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-12	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-13	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-14	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-15	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-16	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-17	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-18	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-19	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-20	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-21	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-22	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-23	68	N/A	3	D04	747	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-24	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-25	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-26	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-27	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-28	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-29	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-30	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-31	68	N/A	3	D05	748	No	LLRW

Table 7
Excavated Material Processing and Disposition Summary

Date Hauled	WA	Associated Trench Survey Unit	Custody Transfer No.	IR Site	Associated Trench Segment/ Manhole ID	RSY	Pad	ESU	Cleared for Re-Use as Backfill?	Disposition
8/8/12	29	N/A	06-D29-68-SU76-32	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-33	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-34	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-35	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-36	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-37	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-38	68	N/A	3	D05	748	No	LLRW
8/8/12	29	N/A	06-D29-68-SU76-39	68	N/A	3	D05	748	No	LLRW

Notes:

ESU - excavated soil unit

IR - Installation Restoration

LLRW - low-level radioactive waste

N/A - not applicable

RSY - radiological screening yard

WA - work area

Table 8
Parcel D-1 Pipe and Manhole Sediment Samples and Disposition Summary

WA	Survey Unit	Trench Segment/ Manhole ID No.	Pipe Description				Sediment Sample				Disposition
			Section No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Date Collected	Sample ID No.	Elevated ROC	Results (pCi/g)	
24	250	06-D24-00-6A	1	SD	RCP	27	11/4/2010	06-PD1PI-0001-001	N/A	N/A	Non-LLRW
		06-D24-00-6A	3	SD	RCP	27	11/4/2010	06-PD1PI-0001-002	N/A	N/A	Non-LLRW
		06-D24-00-6E	24	SD	RCP	30	11/9/2010	06-PD1PI-0002-001	N/A	N/A	Non-LLRW
	251	06-D24-00-6A	11	SD	RCP	27	11/4/2010	06-PD1PI-0001-003	N/A	N/A	Non-LLRW
		06-D24-00-6A	19	SD	RCP	27	11/8/2010	06-PD1PI-0001-004	N/A	N/A	Non-LLRW
		06-D24-00-6A	31	SD	RCP	27	11/8/2010	06-PD1PI-0001-005	N/A	N/A	Non-LLRW
		06-D24-00-6A	39	SD	RCP	27	11/8/2010	06-PD1PI-0001-006	N/A	N/A	Non-LLRW
		06-D24-00-6A	62	SD	RCP	27	11/8/2010	06-PD1PI-0001-007	N/A	N/A	Non-LLRW
		06-D24-00-6A	70	SD	RCP	27	11/8/2010	06-PD1PI-0001-008	N/A	N/A	Non-LLRW
		06-D24-00-6A	92	SD	RCP	27	11/8/2010	06-PD1PI-0001-009	N/A	N/A	Non-LLRW
		252	06-D24-00-6H	1	SD	RCP	24	1/17/2011	06-PD1PI-0005-001	¹³⁷ Cs	0.2599
	06-D24-00-6K		3	SD	RCP	36	11/10/2010	06-PD1PI-0003-001	¹³⁷ Cs	0.131	LLRW
	06-D24-00-6K		31	SD	RCP	36	11/10/2010	06-PD1PI-0003-002	N/A	N/A	Non-LLRW
	06-D24-00-6K		37	SD	RCP	36	11/10/2010	06-PD1PI-0003-003	N/A	N/A	Non-LLRW
	253	06-D24-00-6E	43	SD	RCP	30	11/9/2010	06-PD1PI-0002-002	N/A	N/A	Non-LLRW
		06-D24-00-6E	55	SD	RCP	30	11/9/2010	06-PD1PI-0002-003	¹³⁷ Cs Total Sr	0.1275 0.3350	LLRW LLRW
		06-D24-00-6E	63	SD	RCP	30	11/9/2010	06-PD1PI-0002-004	¹³⁷ Cs	0.2809	LLRW
	255	06-D24-00-6E	127	SD	RCP	30	11/10/2010	06-PD1PI-0002-005	¹³⁷ Cs	0.1902	LLRW
	257	06-D24-00-6K	43	SD	RCP	36	11/10/2010	06-PD1PI-0003-004	¹³⁷ Cs	0.1183	LLRW
		06-D24-00-6K	57	SD	RCP	36	11/11/2010	06-PD1PI-0003-005	¹³⁷ Cs	0.2019	LLRW
		06-D24-00-6K	73	SD	RCP	36	11/11/2010	06-PD1PI-0003-006	N/A	N/A	LLRW
259	06-D24-00-6N	6	SD	RCP	36	11/11/2010	06-PD1PI-0004-001	¹³⁷ Cs	0.1585	LLRW	
	06-D24-00-6N	14	SD	RCP	36	11/11/2010	06-PD1PI-0004-002	¹³⁷ Cs ²²⁶ Ra	0.1455 1.4855	LLRW LLRW	
	06-D24-00-6N	21	SD	RCP	36	11/12/2010	06-PD1PI-0004-003	¹³⁷ Cs	0.2233	LLRW	

Table 8
Parcel D-1 Pipe and Manhole Sediment Samples and Disposition Summary

WA	Survey Unit	Trench Segment/ Manhole ID No.	Pipe Description				Sediment Sample				Disposition
			Section No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Date Collected	Sample ID No.	Elevated ROC	Results (pCi/g)	
24, 28	278	MH 749	N/A	N/A	N/A	N/A	1/19/2012	06-PD1-MH749-001	N/A	N/A	Non-LLRW
29	266	MH 780	N/A	N/A	N/A	N/A	2/25/2011	06-PD1-MH780-001-01	N/A	N/A	Non-LLRW
	267	MH 745	N/A	N/A	NA	NA	3/8/2011	06-PD1-MH745-001-01	N/A	N/A	Non-LLRW
		MH 775	N/A	N/A	N/A	N/A	3/8/2011	06-PD1-MH775-001-01	N/A	N/A	Non-LLRW
	275	MH 766	N/A	N/A	N/A	N/A	3/17/2011	06-PD1-MH766-001-01	N/A	N/A	Non-LLRW
		MH 768	N/A	N/A	N/A	N/A	3/17/2011	06-PD1-MH768-001-02	N/A	N/A	Non-LLRW
		MH 769	N/A	N/A	N/A	N/A	3/17/2011	06-PD1-MH769-001-03	N/A	N/A	Non-LLRW
25	283	MH 787	N/A	N/A	N/A	N/A	11/2/2011	06-PD1-MH787-001	¹³⁷ Cs	0.4798	LLRW
		MH 785	N/A	N/A	N/A	N/A	11/2/2011	06-PD1-MH785-001	N/A	N/A	Non-LLRW

Notes:

¹³⁷ Cs - cesium-137

²²⁶ Ra - radium-226

LLRW - low-level radioactive waste

N/A - not applicable

pCi/g - picocuries per gram

SD - storm drain

Sr - strontium

RCP - reinforced concrete pipe

WA - work area

Table 9
Parcel D-1 Manhole Summary

WA	Trench Survey Unit	IR Site	Manhole ID	Date Removed	Removal Status	Identified in Design Plan?	Located in Field?	Final Disposition
24	250	N/A	MH727	11/05/10	Completed	Yes	Yes	Non-LLRW
		48	MH742	01/18/11	Completed	No	Yes	Non-LLRW
24	252	N/A	MH729	11/09/10	Completed	Yes	Yes	LLRW
		N/A	MH730	11/04/10	Completed	Yes	Yes	LLRW
		48	MH743	01/19/11	Completed	No	Yes	Non-LLRW
24	254	35	MH700	02/22/11	Completed	Yes	Yes	Non-LLRW
		35	MH701	N/A	Note 1	Yes	No	N/A
24	259	N/A	MH732	11/11/10	Completed	Yes	Yes	LLRW
		N/A	MH735	11/12/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH736	11/12/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH737	11/12/10	Completed	Yes	Yes	Non-LLRW
30	260	N/A	MH715	10/21/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH716	10/21/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH717	10/21/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH718	10/21/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH719	10/20/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH721	10/19/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH722	10/19/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH723	10/19/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH724	10/20/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH725	10/18/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH726	10/19/10	Completed	Yes	Yes	Non-LLRW
		24	261	N/A	MH707	12/01/10	Completed	Yes
N/A	MH708			12/01/10	Completed	Yes	Yes	Non-LLRW
N/A	MH738			11/29/10	Completed	Yes	Yes	Non-LLRW
N/A	MH739			11/30/10	Completed	Yes	Yes	Non-LLRW
N/A	MH748			11/29/10	Completed	Yes	Yes	Non-LLRW
28	262	32	MH750	12/03/10	Completed	Yes	Yes	Non-LLRW
		32	MH752	12/07/10	Completed	Yes	Yes	Non-LLRW
		32	MH756	01/31/11	Completed	Yes	Yes	Non-LLRW
		32	MH781	12/02/10	Completed	Yes	Yes	Non-LLRW
30	263	N/A	MH720	01/06/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH734	01/18/11	Completed	No	Yes	Non-LLRW
		N/A	MH740	01/18/11	Completed	No	Yes	Non-LLRW
		N/A	MH741	01/18/11	Completed	No	Yes	Non-LLRW
24	264	N/A	MH706	11/24/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH710	11/16/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH714	10/27/10	Completed	Yes	Yes	Non-LLRW
24	265	N/A	MH704	03/21/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH705	03/21/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH712	03/23/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH713	03/22/11	Completed	Yes	Yes	Non-LLRW

Table 9
Parcel D-1 Manhole Summary

WA	Trench Survey Unit	IR Site	Manhole ID	Date Removed	Removal Status	Identified in Design Plan?	Located in Field?	Final Disposition
29	266	68	MH744	03/04/11	Completed	No	Yes	Non-LLRW
		68	MH776	03/04/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH777	03/04/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH778	03/01/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH779	03/03/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH780	03/01/11	Completed	Yes	Yes	Non-LLRW
29	267	N/A	MH745	03/08/11	Completed	No	Yes	Non-LLRW
		N/A	MH772	03/15/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH773	03/09/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH774	03/09/11	Completed	Yes	Yes	Non-LLRW
		68	MH775	03/08/11	Completed	Yes	Yes	Non-LLRW
29	268	32	MH760	03/15/11	Completed	Yes	Yes	Non-LLRW
28	270	N/A	MH764	03/14/11	Completed	Yes	Yes	Non-LLRW
28	271	32	MH747	09/19/11	Completed	Yes	Yes	Non-LLRW
		32	MH754	09/26/11	Completed	Yes	Yes	Non-LLRW
28	271	32	MH755	09/26/11	Completed	Yes	Yes	Non-LLRW
		32	MH755	09/26/11	Completed	Yes	Yes	Non-LLRW
24	272	35	MH731	10/12/10	Completed	No	Yes	Non-LLRW
24	273	35	MH728	10/11/10	Completed	No	Yes	Non-LLRW
24	274	35	MH702	10/18/10	Completed	Yes	Yes	Non-LLRW
		35	MH703	10/13/10	Completed	Yes	Yes	Non-LLRW
		N/A	MH733	10/15/10	Completed	No	Yes	Non-LLRW
29	275	N/A	MH766	03/18/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH767	03/21/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH768	03/16/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH769	03/17/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH770	03/21/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH771	03/16/11	Completed	Yes	Yes	Non-LLRW
28	276	32	MH758	03/21/11	Completed	Yes	Yes	Non-LLRW
		32	MH759	03/16/11	Completed	Yes	Yes	Non-LLRW
		32	MH761	03/16/11	Completed	Yes	Yes	Non-LLRW
		32	MH762	03/16/11	Completed	Yes	Yes	Non-LLRW
		32	MH763	03/16/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH765	03/17/11	Completed	Yes	Yes	Non-LLRW
24	277	32	MH709	03/28/11	Completed	Yes	Yes	Non-LLRW
		N/A	MH711	03/25/11	Completed	Yes	Yes	Non-LLRW
28	278	N/A	MH788	04/01/11	Completed	Yes	Yes	LLRW
		N/A	MH749	N/A	Note 2	Yes	Yes	N/A
28	279	32	MH751	09/27/11	Completed	Yes	Yes	Non-LLRW
		32	MH753	09/27/11	Completed	Yes	Yes	Non-LLRW
		32	MH757	09/27/11	Completed	Yes	Yes	Non-LLRW
28	280	32	MH746	09/26/11	Completed	Yes	Yes	Non-LLRW

Table 9
Parcel D-1 Manhole Summary

WA	Trench Survey Unit	IR Site	Manhole ID	Date Removed	Removal Status	Identified in Design Plan?	Located in Field?	Final Disposition
25	283	N/A	MH782	11/02/11	Completed	No	Yes	Non-LLRW
		N/A	MH783	11/03/11	Completed	No	Yes	Non-LLRW
		N/A	MH784	11/03/11	Completed	No	Yes	Non-LLRW
		N/A	MH785	11/02/11	Completed	No	Yes	Non-LLRW
		N/A	MH787	11/03/11	Completed	No	Yes	LLRW

Notes:

1 - Manhole 701 could not be located in the field.

2 - Manhole 749 remained in place.

IR - Installation Restoration

LLRW - low-level radioactive waste

N/A - not applicable

WA - work area

Table 10
Parcel D-1 Extraneous Pipe Summary

Trench Survey Unit	Trench Segment	EP ID No.	Date Discovered	Description				Radiological Survey		Disposition
				Length Removed (LF)	Pipe Diameter (inches)	Material Type	Former Use	Date Performed	Survey No.	
SU 272	06-D24-00-3A	EP-101	10/11/10	5	12	Steel	Salt Water	10/14/2010	HPS-CTO6-0047	LLRW
SU 256	06-D24-35-2H	EP-102	10/18/10	20	4	Cast Iron	Unknown	10/21/2010	HPS-CTO6-0076	Non-LLRW
SU 256	06-D24-35-2H	EP-103	10/18/10	15	4	Unknown	Unknown	10/20/2010	HPS-CTO6-0072	Non-LLRW
SU 260	06-D30-00-4A	EP-104	10/20/10	5	10	Steel	Salt Water	N/A	N/A	LLRW
SU 260	06-D30-00-1A	EP-105	10/25/10	59	4	Steel	Salt Water	N/A	N/A	LLRW
SU 263	06-D30-00-3A	EP-106	01/04/11	59	4	Steel	Salt Water	1/5/2011	HPS-CTO6-0329	LLRW
SU 264	06-D24-00-5E	EP-107	01/12/11	65	3	Steel	Unknown	11/16/2010	HPS-CTO6-0153	LLRW
SU 264	06-D24-00-5D	EP-108	01/12/11	63	10	Steel	Salt Water	1/11/2011	HPS-CTO6-0361	Non-LLRW
SU 261	06-D24-32-6S	EP-109	01/12/11	15	10	Steel	Salt Water	N/A	N/A	Non-LLRW
SU 262	06-D28-32-1M	EP-110	01/12/11	8	3	Steel	Condensate	N/A	N/A	LLRW
SU 262	06-D28-32-1L	EP-111	01/28/11	8	8	Steel	Salt Water	N/A	N/A	LLRW
SU 258	06-D29-00-15A	EP-112	02/08/11	6	8	Steel	Salt Water	11/4/2011	HPS-CTO6-1610	LLRW
SU 266	06-D29-00-14G	EP-113	02/09/11	6	8	Steel	Salt Water	N/A	N/A	LLRW
SU 254	06-D24-35-2A	EP-114	02/28/11	5	3	Steel	Unknown	N/A	N/A	LLRW
SU 277	06-D24-32-9B	EP-115	02/23/11	6	10	Steel	Salt Water	4/15/2011	HPS-CTO6-00967	Non-LLRW
SU 267	06-D29-00-11A	EP-116	03/08/11	18	8	Steel	Unknown	3/30/2011	HPS-CTO6-00873	LLRW
SU 269	06-D29-00-12A	EP-117	03/10/11	5	8	Steel	Salt Water	3/11/2011	HPS-CTO6-00728	LLRW
SU 269	06-D29-00-13A	EP-118	03/11/11	5	8	Steel	Salt Water	N/A	N/A	LLRW
SU 267	06-D29-00-9B	EP-119	03/15/11	7	8	Steel	Salt Water	3/30/2011	HPS-CTO6-00873	LLRW
SU 275	06-D29-00-7A	EP-120	03/16/11	6	8	Steel	Salt Water	3/30/2011	HPS-CTO6-00873	LLRW
SU 275	06-D29-32-3A	EP-121	03/18/11	5	8	Steel	Salt Water	4/15/2011	HPS-CTO6-00968	LLRW
SU 270	06-D28-32-2E	EP-122	09/19/11	8	4	Steel	Unknown	9/19/2011	HPS-CTO6-1449	LLRW
SU 271	06-D28-32-2A	EP-123	09/20/11	20	4	Steel	Unknown	N/A	N/A	LLRW
SU 271	06-D28-32-2A	EP-124	09/20/11	20	4	Steel	Unknown	N/A	N/A	LLRW
SU 279	06-D28-32-1S	EP-125	09/27/11	40	4	Steel	Unknown	9/28/2011	HPS-CTO6-1449	LLRW
SU 280	06-D28-32-3B	EP-126	10/04/11	12	4	Steel	Unknown	10/5/2011	HPS-CTO6-1479	LLRW
SU 280	06-D28-32-3B	EP-127	10/04/11	12	4	Steel	Unknown	10/5/2011	HPS-CTO6-1479	LLRW
SU 279	06-D28-32-1W	EP-128	10/05/11	55	4	Steel	Unknown	10/5/2011	HPS-CTO6-1479	LLRW
SU 279	06-D28-32-1W	EP-129	10/05/11	55	3	Steel	Unknown	10/5/2011	HPS-CTO6-1479	LLRW

Notes:
EP - extraneous pipe
LF - linear feet
LLRW - low-level radioactive waste
N/A - not applicable

Appendix A
Kick-off Meeting Agenda

KICK-OFF MEETING

September 16, 2010 Field Mobilization Summary for Contract Task Order 0006 Radiological Remediation and Support, Parcel D-1, Hunters Point Shipyard, San Francisco, CA

Purpose and Scope of the Remediation

The purpose of this Time-Critical Removal Action (TCRA) is to achieve the radiological “free release” of Parcel D-1. The major components of field work to achieve this goal are the:

- Excavation of an estimated 28,665 cubic yards of soil and removal of approximately 12,850 feet of storm water and sanitary sewer piping and manholes
- Radiological survey and any necessary remediation of one building, four building sites, and two piers
- Radiological survey and recycling and/or transfer as Low-level Radiological Waste (LLRW), of approximately 840,000 square feet (SF) or 14,700 cubic yards (CY) of asphalt
- Radiological survey and recycling and/or transfer as LLRW, of approximately 26,600 linear feet (LF) of steel railroad rail and steel crane rail
- Lead and asbestos survey and abatement, and subsequent demolition of 10 buildings on the Gun Mole Pier and 1 building on the South Pier
- Backfill of trenches created by sewer removal
- Construction of approximately 900 LF of swales to collect and convey storm water

Contract Work Area (CWA)

Shaw will radiological remediate Work Areas 24, 28, 29 and 30 of Parcel D-1 (“Contract Work Area”; see attached figure).

Removal of Sewers

All storm water, sanitary and combined sewer systems within the CWA are to be radiologically remediated by removal. Soils that overlie sewer pipe or lie within 1 foot of sewer pipe are considered radiologically impacted and will be excavated and direct-loaded for transport to an RSY for processing by the Navy Basewide Radiological Contractor, Tetra Tech, Inc., under their separate contract to the Navy. Sewer piping and other sewer structures will be excavated, radiologically evaluated and classified as either general debris or LLRW and transferred on-base to either ITSI, Inc. or EMS, Inc., respectively, for management by those contractors under their separate contracts to the Navy.

Radiological Survey of Sewer Trenches

Shaw will radiologically survey the trench sides and bottoms of each Survey Unit (SU) after completing the excavation of that SU. Trench surfaces are to be surveyed compliant to the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) as implemented conformable to Shaw's Parcel D-1 Navy-approved project plans. After removal of sewer piping and related soils, the trench surfaces will be surveyed by manual scan. Soil samples will be collected from trench walls and bottoms and sent to the Basewide Radiological Contractor, Tetra Tech Laboratory, for radionuclide testing with the results reported back to Shaw. When both radiological surface surveys and laboratory analysis indicate satisfactory results, Shaw will request concurrence from the Navy's Radiological Affairs Support Office (RASO) to backfill the trenches with approved soil.

Backfill of Sewers

Shaw will load, haul and backfill the excavated sewer trenches using soils from two approved HPS sources: Soils excavated from Parcel D-1 sewer trenches, delivered to RSYs and processed for release and use as backfill after Navy/RASO approval; and the approved borrow pile located near Building 600 in Parcel E. Backfill will be placed in specified trench segments in accordance with Shaw project plans and RASO concurrence of RES-RAD dosage models for trench SUs.

Radiological Screening and Management of Asphalt, Steel Rails and Wood Rail Ties

Shaw will remove in-place asphalt from the two pier sites and either recycle it or manage it as LLRW based on results of radiological surveys. Shaw will radiologically scan the asphalt in-place and then remove it and manage it in piles corresponding to SUs. Shaw will radiologically survey the soil surfaces exposed by asphalt removal. If both the pre-removal and post-removal surveys indicate the asphalt is not radiologically contaminated, Shaw will crush it onsite for use in re-grading within the CWA following backfill of excavations. Shaw will load radiologically contaminated asphalt into bins supplied by EMS under their separate contract to the Navy for management as LLRW.

Shaw will remove in-place railroad and crane rail from the pier sites and recycle them or manage them as LLRW based on radiological survey. Shaw will transfer LLRW rail to EMS within the CWA for management as LLRW under their separate contract to the Navy. Shaw expects to recycle all rail determined to be radiologically uncontaminated.

Shaw will remove all in-place wood ties found during rail removal. Shaw expects to direct-load all the ties as LLRW, into bins supplied by EMS under their separate contract to the Navy.

Radiological Survey and Remediation of Building and Pier Sites

Shaw will radiologically survey five building sites and two pier sites identified as radiologically impacted. Surveys will include scans, static measurements and soil media testing for ROCs performed compliant to MARSSIM and Shaw's Task-Specific Plans (TSPs). Soil media samples will be analyzed by the Basewide Radiological Contractor, Tetra Tech Laboratory, under their separate contract to the Navy and reported back to Shaw. Any ground or soil surfaces found to be radiologically contaminated will be excavated down one foot and resurveyed in accordance with the TSPs.

Demolition of Buildings

Shaw will demolish eleven buildings and a shed located on the Gun Mole Pier and one building on the South Pier. The structures are not radiologically impacted. Demolition will be performed upon completion of structural safety surveys, any necessary abatement of lead-painted surfaces and asbestos-containing materials (ACMs), and under appropriate dust controls. Building debris will be managed and disposed by waste stream: ACM waste, general debris, and salvageable ferrous and non-ferrous metals. Disposal of metals will primarily be made by Shaw subcontractor Yerba Buena Engineering via recycling. Other debris will be sorted and managed within the CWA pending transfer to the Navy Disposal Contractor, ITSI, for disposal under their separate contract to the Navy.

Building removal will cease at grade. No sub-pavement removal or piercing will be performed during the demolition.

Construction of Storm water Swales

Shaw will construct approximately 900 LF of lined storm water collection and conveyance swales. The swales will connect those recently constructed in Parcel G to an existing outfall located along the seawall of Parcel D, to replace major storm drain “mains” removed as part of radiological remediation.

Work Tasks

The following site features and work activities will be executed:

Notifications, Training and Mobilization

Preparatory Meetings

Erecting Perimeter Fencing and Establishing Radiological Controls

Underground Utility Location

Baseline Topographic Survey

Excavation Progress Surveys

Placing, Inspecting and Maintaining Storm water BMPs

Storm water Quality Testing

Pre-Demolition Structural Safety Surveys

Dust Suppression and Air Monitoring

Breaking and Sawcutting Asphalt and Concrete

Managing SU Lay-Down Areas for Broken-Out Asphalt

Shearing, Cutting or Breaking of Steel, Timber and Other Debris for Transport and Disposal

Wrapping ACM or Other Debris

Lifting and Loading Debris

Direct-Loading Soil to Trucks and Bins

Laying Back Earthen Slopes

Lifting Pipe and Other Sewer Structures

Sampling Sediment within Pipes or Other Sewer Structures
Hot-Tapping and Sawcutting Extraneous Piping in Sewer Trenches
Capping, Plugging or Removing Extraneous Pipe
Evaluating Pipe for Radiological Contamination and ACMs and Classifying it for Disposal
Loading Pipe to Trucks and Bins
Direct-Loading of Wood to Bins
Radiologically Evaluating Steel Rail
Loading Steel to Trucks or Bins
Radiological Scans of Horizontal Surfaces by Hand-held or “Buggy”-Mounted Methods
Making Static Measurements of Gamma Activity
Collecting and Testing Activity of Radiological “Swipe” Samples for Removable Contamination
Sampling, Handling and Transfer of Soil Samples for Radiological Testing
Loading, Hauling and Placing Clean Soils into Trench Excavations
Backfilling Excavations
Constructing Storm Water Swales
Removing Fencing, Unused Materials, BMPs and Project Equipment

Work Schedule

Shaw will work 5 each 8-hour weekdays to coincide with the hours of operation for the RSY. Upon completing mobilization and pre-work topographic and utility surveys Shaw will begin sewer excavation, lead and asbestos survey and abatement, and building demolition. Sewer removal will begin in Work Area 24 (“The triangle”) and proceed to Work Areas 30, 29 and 28 (respectively the South Pier, seaward Gun Mole Pier and Inland Gun Mole Pier). Sewer trench backfilling is expected to begin approximately 3 weeks after sewer removal and generally proceed at a parallel rate. Field work is expected to be completed in 30 weeks.

Radiological Controls and Materials Management

Shaw will implement radiological controls in the CWA in accordance with a Memorandum of Understanding (MOU) that will be jointly authorized by itself, Tetra Tech and EMS and in accordance with Shaw’s Navy-approved Parcel D-1 Radiological Protection Plan, Radiological Work Plan and other Parcel D-1 plans. Controls will be managed to protect persons, property and the environment and will be removed from the parcel incrementally as concurrence of non-impact is received from RASO and backfilling of excavations are completed.

Environmental Controls

Shaw will control dust emissions from vehicle operations, exposed soil surfaces, stockpiled materials and other sources, and storm water quality emissions by containing runoff and minimizing rain and runoff contact with recently exposed soil surfaces or materials that may have disturbed, modified by or affected this work. Both air quality and storm water quality will be monitored by sampling and testing.

Appendix B
Air Monitoring Report

Hunters Point Naval Shipyard - Air Monitoring Summary
Parcel D-1, Contract Task Order (CTO 6)
October 6, 2010 through November 13, 2012

Objective-Locations - Air monitoring was performed to ensure worker and community safety in accordance with U.S.EPA and California ARB/BAAQMD approved methodology, and also in accordance with the *Dust Control Plan for Time Critical Removal Actions* ("basewide dust control plan"; May 15, 2009). Monitoring stations were located upwind and downwind from the overall work area based on prevailing wind direction. Monitoring stations were moved based on forecasts of strong or sustained winds not originating from the west. A figure showing locations of air monitoring stations is presented on the following page of this report. Each monitoring station included three different monitoring systems: one each for total suspended particulates (TSP) (including manganese [Mn] and lead [Pb]), particulate matter with diameter less than 10 microns (PM10), and asbestos.

Schedule Coverage - Air monitoring was performed from early morning Monday through close of business on Friday. From Monday morning until Friday morning, monitoring stations were run continuously for 24 hour cycles. This generated four (4) samples (for each analyte listed below, for each monitoring station). Friday monitoring was performed from early morning until end of the work day, i.e. 8 to 10 hours. Note that for asbestos, monitoring was performed for ten (10) hours Monday through Thursday, and for approximately eight (8) hours on Friday. This operational schedule was consistent with that performed currently by other primary Navy HPNS contractors, and evaluated both background and operations-related air quality.

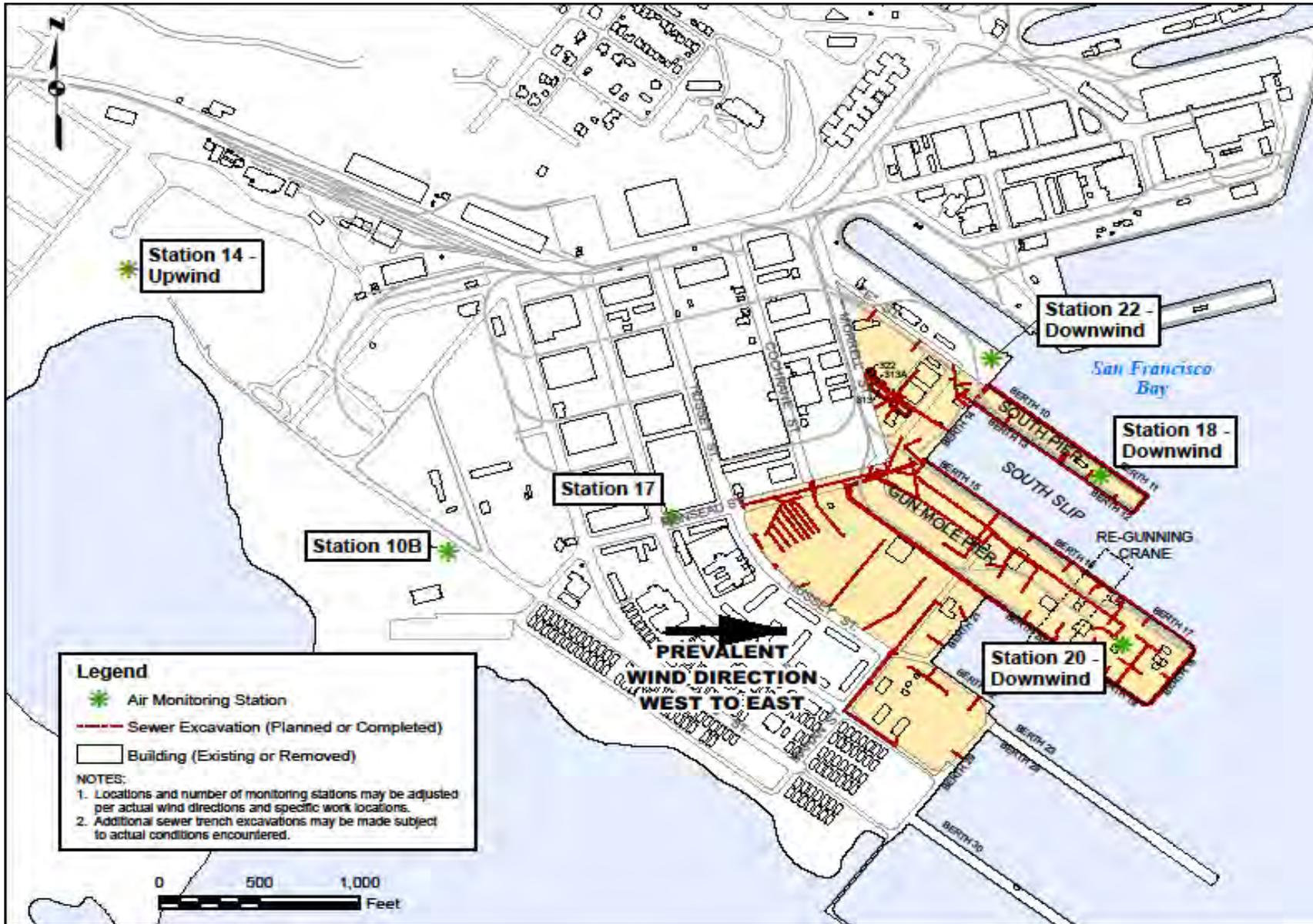
TSP, Mn, and Pb - TSP were sampled in accordance with U.S. EPA's reference sampling method for TSP, described in Title 40 Code of Federal Regulations (CFR) Part 50, Subpart B. Each sample was collected on a filter over the course of a period not exceeding 24 hours. The mass of TSP was calculated by subtracting the before-run weight of the filter paper from the after-run weight. Mn and Pb were calculated by chemical analysis following an aqueous digestion of the filter paper. Mn was calculated in accordance with one of the IO-3 methods identified in U.S. EPA's *Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air*. Pb was calculated in accordance with a modified EPA Method 12.

PM10 - PM10 was sampled in accordance with U.S. EPA's reference sampling method for PM10 (40 CFR 50, Subpart J). Each sample was collected on a filter over a period not exceeding 24 hours. PM10 was based on a comparison of before and after-use filter weight.

Asbestos - Asbestos was sampled and analyzed in accordance with the National Institute for Occupational Safety and Health (NIOSH) Method 7400, from the *NIOSH Manual of Analytical Methods* (NIOSH 1994). Fibers were collected on three-piece cellulose ester filters fitted with conductive cowlings. Samples were collected over periods not exceeding 12 hours, e.g. primarily during work hours. Count of the asbestos fibers was made by visual examination via polarized microscopy.

NOTE: On April 13, 2011, the upwind air monitoring station for HPNS project CTO-0005 "PCB Hotspot Removal" was vandalized. To continue air monitoring for CTO-0005 and CTO-0006, the CTO-0006 upwind station 17 was relocated prior to work in April 14, 2011 to station 14, and remained there through the end of the work day on May 5, 2011.

NOTE 2: Beginning on July 26, 2012, the upwind PM10 unit was inoperable. Data from the upwind PM10 unit at CTO-0005 was used until CTO-0006 upwind unit was repaired/replaced.



Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1010349-04	0004	10/06/2010	18	2.0	600	1.2	6.5	0.0026
1010349-07	0007	10/07/2010	17	2.0	356	0.7	4.5	<0.0022
1010349-10	0010	10/07/2010	18	2.0	392	0.8	3	<0.0036
1010349-13	0013	10/08/2010	17	2.0	600	1.2	2.5	<0.0022
1010349-16	0016	10/08/2010	18	2.0	600	1.2	3.5	<0.0022
1010349-19	0019	10/11/2010	17	2.0	600	1.2	7	0.0028
1010349-22	0022	10/11/2010	18	2.0	600	1.2	3.5	<0.0022
1010406-01	0025	10/12/2010	17	2.0	600	1.2	6	0.0023
1010406-04	0028	10/12/2010	18	2.0	600	1.2	11	0.0043
1010406-07	0031	10/13/2010	17	2.0	600	1.2	9	0.0035
1010406-10	0034	10/13/2010	18	2.0	600	1.2	5.5	<0.0022
1010464-01	0037	10/14/2010	17	2.0	600	1.2	2.5	<0.0022
1010464-04	0040	10/14/2010	18	2.0	600	1.2	4.5	<0.0022
1010464-07	0043	10/15/2010	17	2.0	476	1.0	5	<0.0028
1010464-10	0046	10/15/2010	18	2.0	518	1.0	6	0.0028
1010637-01	0049	10/18/2010	17	2.0	600	1.2	3	<0.0022
1010637-04	0052	10/18/2010	18	2.0	600	1.2	3.5	<0.0022
1010637-07	0055	10/19/2010	17	2.0	600	1.2	4	<0.0022
1010637-10	0058	10/19/2010	18	2.0	600	1.2	2	<0.0022
1010637-13	0061	10/20/2010	17	2.0	600	1.2	4	<0.0022
1010637-16	0064	10/20/2010	18	2.0	600	1.2	4	<0.0022
1010692-01	0067	10/21/2010	17	1.9	600	1.1	1	<0.0022
1010692-04	0070	10/21/2010	18	2.0	600	1.2	6	0.0023
1011030-01	0076	10/25/2010	18	N/A	N/A	N/A	N/A	N/A
1011030-07	0079	10/27/2010	17	2.0	600	1.2	2	<0.0022
1011030-10	0082	10/26/2010	18	2.0	600	1.2	2.5	<0.0022
1011030-13	0085	10/28/2010	17	2.0	600	1.2	3	<0.0022
1011030-16	0088	10/27/2010	18	2.0	293	0.6	3	<0.0022
1011112-01	0091	11/01/2010	17	2.0	600	1.2	1	<0.0022
1011112-04	0094	11/01/2010	18	2.0	600	1.2	7.5	0.003
1011170-01	0097	11/02/2010	17	2.0	600	1.2	8	0.0031
1011170-04	0100	11/02/2010	18	2.0	600	1.2	5	<0.0022
1011170-07	0103	11/03/2010	17	2.0	600	1.2	2.5	<0.0022
1011170-10	0106	11/03/2010	18	2.1	600	1.3	6	0.0022
1011258-01	0109	11/04/2010	17	2.0	600	1.2	6.5	0.0026
1011258-04	0112	11/04/2010	18	2.0	600	1.2	3	<0.0022
1011258-07	0115	11/05/2010	17	2.0	418	0.8	ND	<0.0031
1011258-10	0118	11/05/2010	18	2.0	413	0.8	1.5	<0.0031
1011258-13	0121	11/08/2010	17	2.0	600	1.2	3	<0.0022
1011258-16	0124	11/08/2010	18	2.0	600	1.2	1.5	<0.0022
1011334-01	0127	11/09/2010	17	2.1	600	1.2	1	<0.0022
1011334-04	0130	11/09/2010	18	2.0	600	1.2	1	<0.0022
1011334-07	0133	11/10/2010	17	2.0	600	1.2	2	<0.0022
1011334-10	0136	11/10/2010	18	2.0	600	1.2	3.5	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1011376-01	0139	11/11/2010	17	2.0	1404	2.8	1.5	<0.0022
1011376-04	0142	11/11/2010	18	2.0	600	1.2	3	<0.0022
1011376-07	0145	11/12/2010	17	1.9	536	1.0	.5	<0.0025
1011376-10	0148	11/12/2010	18	2.0	343	0.7	ND	<0.0025
1011484-01	0151	11/15/2010	17	2.0	600	1.2	2	<0.0022
1011484-04	0154	11/15/2010	18	2.0	600	1.2	4.5	<0.0022
1011484-07	0157	11/16/2010	17	2.0	600	1.2	3	<0.0022
1011484-10	0160	11/16/2010	18	2.0	600	1.2	5.5	<0.0022
1011484-13	0163	11/17/2010	17	2.0	1442	2.9	2	<0.00093
1011484-16	0166	11/17/2010	18	2.0	600	1.2	ND	<0.0022
1011547-01	0169	11/18/2010	17	2.0	600	1.2	4	<0.0022
1011547-04	0172	11/18/2010	18	2.0	600	1.2	3.5	<0.0022
1011547-07	0175	11/19/2010	17	2.0	371	0.7	2	<0.0036
1011547-10	0178	11/19/2010	18	2.0	369	0.7	2.5	<0.0036
1011649-01	0181	11/24/2010	17	2.0	424	0.8	3.5	<0.0032
1011649-04	0184	11/24/2010	18	2.0	397	0.8	1.5	<0.0034
1012048-01	0187	11/29/2010	17	2.0	600	1.2	4	<0.0022
1012048-04	0190	11/29/2010	18	2.0	600	1.2	3	<0.0022
1012048-07	0193	11/30/2010	17	2.0	600	1.2	5.5	<0.0022
1012048-10	0196	11/30/2010	18	2.0	600	1.2	7	0.0028
1012048-13	0199	12/01/2010	17	2.0	1442	2.9	1.5	<0.00093
1012048-16	0202	12/01/2010	18	2.0	600	1.2	1	<0.0022
1012173-01	0205	12/02/2010	17	2.0	600	1.2	4.5	<0.0022
1012173-04	0208	12/02/2010	18	2.0	600	1.2	6	0.0023
1012173-07	0211	12/06/2010	17	2.0	1447	2.9	3	<0.00093
1012173-10	0214	12/06/2010	18	1.8	600	1.1	2	<0.0025
1012233-01	0217	12/07/2010	17	2.0	600	1.2	2.5	<0.0022
1012233-04	0220	12/07/2010	18	1.8	600	1.1	2	<0.0025
1012325-01	0223	12/13/2010	17	1.9	600	1.1	.5	<0.0025
1012325-04	0226	12/13/2010	18	2.0	600	1.2	3	<0.0022
1012394-01	0229	12/14/2010	17	2.0	600	1.2	3.5	<0.0022
1012394-04	0232	12/14/2010	18	2.0	600	1.2	3.5	<0.0022
1012394-07	0235	12/15/2010	17	2.0	1442	2.9	2.5	<0.00093
1012394-10	0238	12/15/2010	18	2.0	600	1.2	2	<0.0022
1012451-01	0241	12/16/2010	17	2.5	600	1.5	2.5	<0.0018
1012451-04	0244	12/16/2010	18	2.1	600	1.3	2	<0.0021
1101090-01	0247	01/03/2011	17	2.0	600	1.2	2	<0.0022
1101090-04	0250	01/03/2011	18	2.0	600	1.2	3.5	<0.0022
1101090-07	0253	01/04/2011	17	2.4	600	1.4	2.5	<0.0019
1101090-10	0256	01/04/2011	18	2.0	600	1.2	3	<0.0022
1101090-13	0259	01/05/2011	17	2.0	1421	2.8	1.5	<0.00096
1101090-16	0262	01/05/2011	20	2.0	600	1.2	3.5	<0.0022
1101152-01	0265	01/06/2011	17	2.1	600	1.3	3	<0.0021
1101152-04	0268	01/06/2011	20	2.0	600	1.2	2	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1101152-07	0271	01/07/2011	17	2.0	509	1.0	2.5	<0.0027
1101152-10	0274	01/07/2011	20	2.0	515	1.0	2	<0.0027
1101221-01	0277	01/10/2011	17	2.0	600	1.2	2	<0.0022
1101221-03	0280	01/10/2011	20	2.0	600	1.2	5	<0.0022
1101221-06	0283	01/11/2011	17	2.0	600	1.2	2.5	<0.0022
1101221-09	0286	01/11/2011	20	2.0	600	1.2	4	<0.0022
1101221-12	0289	01/12/2011	17	2.0	600	1.2	2	<0.0022
1101221-15	0292	01/12/2011	20	2.0	600	1.2	3	<0.0022
1101323-01	0295	01/13/2011	17	2.0	600	1.2	1.2	<0.0022
1101323-04	0298	01/13/2011	20	2.0	600	1.2	1.2	<0.0022
1101323-07	0301	01/14/2011	17	2.0	434	0.9	0.9	<0.003
1101323-10	0304	01/14/2011	20	2.0	404	0.8	0.8	<0.0034
1101323-13	0307	01/17/2011	17	2.3	600	1.4	3	<0.0019
1101323-16	0310	01/17/2011	20	2.0	600	1.2	2.5	<0.0022
1101429-01	0313	01/18/2011	17	2.1	600	1.2	2	<0.0022
1101429-04	0316	01/18/2011	20	2.0	600	1.2	1	<0.0022
1101429-07	0319	01/19/2011	17	2.0	600	1.2	5	<0.0022
1101429-10	0322	01/19/2011	20	2.0	600	1.2	4.5	<0.0022
1101447-01	0325	01/20/2011	17	2.0	600	1.2	4.5	<0.0022
1101447-04	0328	01/20/2011	20	2.0	600	1.2	4	<0.0022
1101447-07	0331	01/21/2011	17	2.0	451	0.9	4	<0.003
1101447-10	0334	01/21/2011	20	2.1	420	0.9	3	<0.003
1101561-01	0337	01/25/2011	17	2.1	600	1.3	7	0.0025
1101561-04	0340	01/25/2011	20	2.0	600	1.2	4	<0.0022
1101561-07	0343	01/26/2011	17	2.0	600	1.2	3	<0.0022
1101561-10	0346	01/26/2011	20	2.1	600	1.3	3	<0.0021
1102066-01	0349	01/27/2011	17	2.0	600	1.2	6	0.0023
1102066-04	0352	01/27/2011	20	2.0	600	1.2	2	<0.0022
1102066-07	0355	01/28/2011	17	2.0	420	0.8	4	<0.0034
1102066-10	0358	01/28/2011	20	2.0	380	0.8	1.5	<0.0034
1102164-01	0361	01/31/2011	17	2.2	600	1.3	2	<0.0021
1102164-04	0364	01/31/2011	20	2.1	600	1.3	2	<0.0021
1102164-07	0367	02/01/2011	17	2.0	600	1.2	3.5	<0.0022
1102164-10	0370	02/01/2011	20	2.0	600	1.2	4	<0.0022
1102164-13	0373	02/02/2011	17	2.1	600	1.3	8	0.0029
1102164-16	0376	02/02/2011	20	2.0	600	1.2	1	<0.0022
1102164-19	0379	02/03/2011	17	2.0	600	1.2	2.5	<0.0022
1102164-22	0382	02/03/2011	20	2.0	600	1.2	3	<0.0022
1102271-01	0385	02/04/2011	17	2.2	600	1.3	6	0.0022
1102271-04	0388	02/04/2011	20	2.2	370	0.8	3.5	<0.0034
1102271-07	0391	02/07/2011	17	2.0	600	1.2	2.5	<0.0022
1102271-10	0394	02/07/2011	20	2.0	600	1.2	2.5	<0.0022
1102271-13	0397	02/08/2011	17	2.0	600	1.2	5.5	<0.0022
1102271-16	0400	02/08/2011	20	2.1	600	1.3	5	<0.0021

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1102465-01	0403	02/09/2011	17	2.0	600	1.2	4	<0.0022
1102465-04	0406	02/09/2011	20	2.0	600	1.2	3	<0.0022
1102465-07	0409	02/10/2011	17	2.0	600	1.2	4.5	<0.0022
1102465-10	0412	02/10/2011	20	2.0	600	1.2	4	<0.0022
1102465-13	0415	02/11/2011	17	2.0	422	0.8	4.5	<0.0034
1102465-16	0418	02/11/2011	20	1.9	382	0.7	1.5	<0.0039
1102668-01	0421	02/21/2011	17	2.0	600	1.2	4	<0.0022
1102668-04	0424	02/21/2011	20	2.0	600	1.2	4.5	<0.0022
1102668-07	0427	02/22/2011	17	2.0	600	1.2	1.5	<0.0022
1102668-10	0430	02/22/2011	20	2.0	600	1.2	2.5	<0.0022
1102668-13	0433	02/23/2011	17	2.0	600	1.2	6	0.0023
1102668-16	0436	02/23/2011	20	2.0	600	1.2	3	<0.0022
1103069-01	0439	02/28/2011	17	2.1	600	1.3	7	0.0025
1103069-04	0442	02/28/2011	20	2.2	600	1.3	3	<0.0021
1103069-07	0445	03/01/2011	17	2.0	600	1.2	4	<0.0022
1103069-10	0448	03/01/2011	20	2.0	600	1.2	1.5	<0.0022
1103188-01	0451	03/03/2011	17	2.2	600	1.3	5.5	<0.0021
1103188-04	0454	03/03/2011	20	2.0	600	1.2	4	<0.0022
1103188-07	0457	03/04/2011	17	2.0	405	0.8	2.5	<0.0034
1103188-10	0460	03/04/2011	20	1.8	365	0.6	4	<0.0045
1103545-01	0463	03/07/2011	17	2.0	600	1.2	3.5	<0.0022
1103545-04	0466	03/07/2011	20	2.0	600	1.2	5.5	<0.0022
1103545-07	0469	03/08/2011	17	2.0	600	1.2	3.5	<0.0022
1103545-10	0472	03/08/2011	20	2.0	600	1.2	3.5	<0.0022
1103545-13	0475	03/09/2011	17	2.0	600	1.2	2.5	<0.0022
1103545-16	0478	03/09/2011	20	2.0	600	1.2	4	<0.0022
1103545-19	0481	03/10/2011	17	2.0	600	1.2	2.5	<0.0022
1103545-22	0484	03/10/2011	20	2.0	600	1.2	.5	<0.0022
1103545-25	0487	03/11/2011	17	2.0	425	0.9	2.5	<0.003
1103545-28	0490	03/11/2011	20	2.0	380	0.8	3.5	<0.0034
1103545-31	0493	03/17/2011	17	2.0	600	1.2	3.5	<0.0022
1103545-34	0496	03/17/2011	20	2.1	600	1.3	1.5	<0.0021
1103791-01	0499	03/28/2011	17	2.1	600	1.3	2.5	<0.0021
1103791-04	0502	03/28/2011	20	2.0	600	1.2	3.5	<0.0022
1103791-07	0505	03/29/2011	17	2.0	600	1.2	3	<0.0022
1103791-10	0508	03/29/2011	20	2.0	600	1.2	3	<0.0022
1104064-01	0511	03/30/2011	17	2.1	600	1.3	8	0.0029
1104064-04	0514	03/30/2011	20	2.0	600	1.2	3.5	<0.0022
1104064-07	0517	03/31/2011	17	2.0	600	1.2	3.5	<0.0022
1104064-10	0520	03/31/2011	20	2.0	600	1.2	8.5	0.0033
1104064-13	0523	04/01/2011	17	2.3	385	0.9	5.5	<0.003
1104064-16	0526	04/01/2011	20	2.0	412	0.8	7.5	0.0044
1104167-01	0529	04/04/2011	17	2.0	600	1.2	4	<0.0022
1104167-04	0532	04/04/2011	20	2.0	412	0.8	7.5	0.003

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1104167-07	0535	04/05/2011	17	2.3	600	1.4	6.5	0.0022
1104167-10	0538	04/05/2011	20	2.0	600	1.2	7	0.0028
1104167-13	0541	04/06/2011	17	2.0	1368	2.7	3.5	<0.001
1104167-16	0544	04/06/2011	20	2.0	600	1.2	13.5	0.0053
1104340-01	0547	04/08/2011	17	1.9	435	0.8	2.5	<0.0034
1104340-04	0550	04/08/2011	20	2.0	387	0.8	6	0.0035
1104340-07	0553	04/11/2011	17	2.0	600	1.2	5	<0.0022
1104340-10	0556	04/11/2011	20	2.0	600	1.2	4	<0.0022
1104340-13	0559	04/12/2011	17	2.0	600	1.2	6.5	0.0026
1104340-16	0562	04/12/2011	20	2.0	600	1.2	6.5	0.0026
1104472-01	0565	04/13/2011	14	2.0	600	1.2	4	<0.0022
1104472-04	0568	04/13/2011	20	2.0	600	1.2	6	0.0023
1104472-07	0571	04/14/2011	14	2.0	600	1.2	2.5	<0.0022
1104472-10	0574	04/14/2011	20	2.1	600	1.3	4	<0.0021
1104472-13	0577	04/15/2011	14	2.0	600	1.2	5	<0.0022
1104472-16	0580	04/15/2011	20	2.0	600	1.2	4.5	<0.0022
1104472-19	0583	04/16/2011	14	2.0	600	1.2	3	<0.0039
1104472-22	0586	04/16/2011	20	2.0	600	1.2	3	<0.0034
1104472-25	0589	04/18/2011	14	2.0	600	1.2	7	0.0028
1104472-28	0592	04/18/2011	20	2.0	600	1.2	5	<0.0022
1104642-01	0595	04/19/2011	14	2.0	600	1.2	4	<0.0022
1104642-04	0598	04/19/2011	20	1.9	600	1.1	1	<0.0025
1104642-07	0601	04/20/2011	14	2.0	600	1.2	.5	<0.0022
1104642-10	0604	04/20/2011	20	2.0	600	1.2	3.5	<0.0022
1104642-13	0607	04/21/2011	14	2.0	410	0.8	2	<0.0034
1104713-01	0613	04/26/2011	14	2.0	600	1.2	3	<0.0022
1104713-04	0616	04/26/2011	20	2.0	600	1.2	3	<0.0022
1104713-07	0619	04/27/2011	14	2.0	600	1.2	1	<0.0022
1104713-10	0622	04/27/2011	20	2.0	600	1.2	ND	<0.0022
1105059-01	0625	04/28/2011	14	2.0	600	1.2	6	0.0023
1105059-04	0628	04/28/2011	20	1.9	600	1.1	7.5	0.0032
1105059-07	0631	04/29/2011	14	2.0	470	0.9	3	<0.003
1105059-10	0634	04/29/2011	20	2.0	372	0.7	2.5	<0.0039
1105193-01	0637	05/02/2011	14	2.0	600	1.2	7.5	0.003
1105193-04	0640	05/02/2011	20	2.0	600	1.2	6	0.0023
1105193-07	0643	05/03/2011	14	2.0	600	1.2	1.5	<0.0022
1105193-10	0646	05/03/2011	20	2.0	600	1.2	5	<0.0022
1105193-13	0649	05/04/2011	14	2.0	600	1.2	4.5	<0.0022
1105193-16	0652	05/04/2011	20	2.0	600	1.2	7.5	0.003
1105193-19	0655	05/05/2011	14	2.0	600	1.2	1.5	<0.0022
1105193-22	0658	05/05/2011	20	2.0	600	1.2	6.5	0.0026
1109373-01	0661	09/12/2011	17	2.0	600	1.2	7.5	0.003
1109373-04	0664	09/12/2011	22	2.0	600	2.3	6	0.0023
1109373-07	0667	09/13/2011	17	2.0	600	1.2	1.5	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1109373-10	0670	09/13/2011	22	2.0	600	1.2	5	<0.0022
1109373-13	0673	09/14/2011	17	2.0	600	1.2	4.5	<0.0022
1109373-16	0676	09/14/2011	22	2.0	600	1.2	7.5	0.003
1109536-01	0679	09/15/2011	17	2.0	600	1.2	2	<0.0022
1109536-04	0682	09/15/2011	22	2.0	600	1.2	3	<0.0022
1109536-07	0685	09/16/2011	17	2.0	420	0.8	5.5	<0.0034
1109536-10	0688	09/16/2011	22	2.0	383	0.8	2.5	<0.0034
1109538-01	0691	09/19/2011	17	2.0	600	1.2	4.5	<0.0022
1109538-04	0694	09/19/2011	22	2.0	600	1.2	2	<0.0022
1109538-07	0697	09/20/2011	17	2.0	600	1.2	4.5	<0.0022
1109538-10	0700	09/20/2011	22	2.0	600	1.2	2	<0.0022
1109538-13	0703	09/21/2011	17	2.0	600	1.2	2	<0.0022
1109538-16	0706	09/21/2011	22	2.0	600	1.2	2.5	<0.0022
1109592-01	0709	09/22/2011	17	2.0	600	1.2	3.5	<0.0022
1109592-04	0712	09/22/2011	22	2.0	600	1.2	1.5	<0.0022
1109592-07	0715	09/23/2011	17	2.0	420	0.8	.5	<0.0034
1109592-10	0718	09/23/2011	22	2.0	416	0.8	3	<0.0034
1109701-01	0721	09/26/2011	17	2.0	600	1.2	4.5	<0.0022
1109701-04	0724	09/26/2011	22	2.0	600	1.2	3	<0.0022
1109701-07	0727	09/27/2011	17	2.0	600	1.2	6.5	0.0026
1109701-10	0730	09/27/2011	22	2.0	600	1.2	4.5	<0.0022
1109701-13	0733	09/28/2011	17	2.0	600	1.2	3	<0.0022
1109701-16	0736	09/28/2011	22	2.0	600	1.2	6.5	0.0026
1110043-01	0739	09/29/2011	17	2.0	600	1.2	.5	<0.0022
1110043-04	0742	09/29/2011	22	2.0	600	1.2	1.5	<0.0022
1110043-07	0745	09/30/2011	17	2.0	415	0.8	1.5	<0.0034
1110043-10	0748	09/30/2011	22	2.0	414	0.8	.5	<0.0034
1110175-01	0751	10/03/2011	17	2.0	600	1.2	1.5	<0.0022
1110175-04	0754	10/03/2011	22	2.0	600	1.2	ND	<0.0022
1110605-01	0757	10/20/2011	17	2.0	600	1.2	4	<0.0022
1110605-04	0760	10/20/2011	22	2.0	600	1.2	3.5	<0.0022
1110605-07	0763	10/21/2011	17	2.0	382	0.8	1.5	<0.0034
1110605-10	0766	10/21/2011	22	2.0	402	0.8	3.5	<0.0034
1110605-13	0769	10/24/2011	17	2.0	600	1.2	3	<0.0022
1110605-16	0772	10/24/2011	22	2.0	600	1.2	2	<0.0022
1110711-01	0775	10/25/2011	17	2.0	600	1.2	4.5	<0.0022
1110711-04	0778	10/25/2011	22	2.0	600	1.2	2.5	<0.0022
1110711-07	0781	10/26/2011	17	2.0	600	1.2	3	<0.0022
1110711-10	0784	10/26/2011	22	2.0	600	1.2	2	<0.0022
1111056-01	0787	10/27/2011	17	2.0	600	1.2	7.5	0.003
1111056-04	0790	10/27/2011	22	2.0	600	1.2	4.5	<0.0022
1111056-07	0793	10/28/2011	17	2.0	423	1.2	7	0.0041
1111056-10	0796	10/28/2011	22	2.0	419	1.2	3	<0.0034
1111056-13	0799	10/31/2011	17	2.0	600	1.2	4	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1111056-16	0802	10/31/2011	22	2.0	600	1.2	2	<0.0022
1111122-01	0805	11/01/2011	17	2.0	600	1.2	8.5	0.0033
1111122-04	0808	11/01/2011	22	2.0	600	1.2	9	0.0035
1111122-07	0811	11/02/2011	17	2.0	600	1.2	6	0.0023
1111122-10	0814	11/02/2011	22	2.0	600	1.2	7.5	0.003
1111200-01	0817	11/03/2011	17	2.0	600	1.2	.5	<0.0022
1111200-04	0820	11/03/2011	22	2.0	600	1.2	3	<0.0022
1111290-01	0823	11/07/2011	17	2.0	600	1.2	2	<0.0022
1111290-04	0826	11/07/2011	22	2.0	600	1.2	3.5	<0.0022
1111290-07	0829	11/08/2011	17	2.0	600	1.2	2.5	<0.0022
1111290-10	0832	11/08/2011	22	2.0	600	1.2	5.5	<0.0022
1111290-13	0835	11/09/2011	CTO5 10B	2.0	600	1.2	1	<0.0022
1111290-16	0838	11/09/2011	22	2.0	600	1.2	3	<0.0022
1111349-01	0841	11/10/2011	CTO5 10B	2.0	600	1.2	4.5	<0.0022
1111349-04	0844	11/10/2011	22	2.0	600	1.2	6.5	0.0026
1111349-07	0847	11/11/2011	CTO5 10B	2.0	460	0.9	2	<0.003
1111349-10	0850	11/11/2011	22	2.0	474	0.9	1	<0.003
1111463-01	0853	11/14/2011	CTO5 10B	2.0	600	1.2	2	<0.0022
1111463-04	0856	11/14/2011	22	2.0	600	1.2	2	<0.0022
1111463-07	0859	11/15/2011	CTO5 10B	2.0	600	1.2	2.5	<0.0022
1111463-10	0862	11/15/2011	22	2.0	600	1.2	3.5	<0.0022
1111463-13	0865	11/16/2011	CTO5 10B	2.0	600	1.2	5	<0.0022
1111463-16	0868	11/16/2011	22	2.0	600	1.2	2.5	<0.0022
1111569-01	0871	11/17/2011	CTO5 10B	2.0	600	1.2	2.5	<0.0022
1111569-04	0874	11/17/2011	22	2.0	600	1.2	3	<0.0022
1111569-07	0877	11/21/2011	CTO5 10B	2.0	600	1.2	1	<0.0022
1111569-10	0880	11/21/2011	22	2.0	600	1.2	4.5	<0.0022
1112042-01	0883	11/28/2011	CTO5 10B	2.0	600	1.2	3.5	<0.0022
1112042-04	0886	11/28/2011	22	2.0	600	1.2	3	<0.0022
1112042-07	0889	11/29/2011	CTO5 10B	2.0	600	1.2	4.5	<0.0022
1112042-10	0892	11/29/2011	22	2.0	600	1.2	1	<0.0022
1112042-13	0895	11/30/2011	CTO5 10B	2.0	600	1.2	2.5	<0.0022
1112042-16	0898	11/30/2011	22	2.0	600	1.2	2	<0.0022
1112128-01	0901	12/01/2011	CTO5 10B	2.0	600	1.2	6	0.0023
1112128-04	0904	12/01/2011	22	2.0	600	1.2	3.5	<0.0022
1112128-07	0907	12/02/2011	CTO5 10B	2.0	379	0.8	4	<0.0034
1112128-10	0910	12/02/2011	22	2.0	406	0.8	3	<0.0034
1112128-13	0913	12/05/2011	CTO5 10B	2.0	600	1.2	4.5	<0.0022
1112128-16	0916	12/05/2011	22	2.0	600	1.2	4.5	<0.0022
1112199-01	0919	12/06/2011	17	2.0	600	1.2	5.5	<0.0022
1112199-04	0922	12/06/2011	22	2.0	600	1.2	5	<0.0022
1112199-07	0925	12/07/2011	17	2.0	1517	3.0	6	0.00094
1112199-10	0928	12/07/2011	22	2.0	600	1.2	5.5	<0.0022
1112269-01	0931	12/08/2011	17	2.0	600	1.2	3	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1112269-04	0934	12/08/2011	22	2.0	600	1.2	6	0.0023
1112374-01	0943	12/13/2011	17	2.0	600	1.2	ND	<0.0022
1112374-04	0946	12/13/2011	22	2.0	600	1.2	1	<0.0022
1112374-07	0949	12/14/2011	17	2.0	600	1.2	2	<0.0022
1112374-10	0952	12/14/2011	22	2.0	600	1.2	2	<0.0022
1112502-01	0955	12/16/2011	17	2.0	478	1.0	2.5	<0.0027
1112502-04	0958	12/16/2011	22	2.0	477	1.0	2	<0.0027
1112574-04	0970	12/20/2011	22	2.0	600	1.2	2	<0.0022
1112574-07	0973	12/21/2011	17	2.0	600	1.2	5.5	<0.0022
1112574-10	0976	12/21/2011	22	2.0	600	1.2	2	<0.0022
1112574-13	0979	12/22/2011	17	2.0	600	1.2	4.5	<0.0022
1112574-16	0982	12/22/2011	22	2.0	600	1.2	3	<0.0022
1112574-19	0985	12/27/2011	17	2.0	600	1.2	3	<0.0022
1112574-22	0988	12/27/2011	22	2.0	600	1.2	3	<0.0022
1201077-01	0991	12/28/2011	17	2.0	600	1.2	1.5	<0.0022
1201077-04	0994	12/28/2011	22	2.0	600	1.2	1.5	<0.0022
1201077-07	0997	12/29/2011	17	2.0	426	0.9	.5	<0.003
1201077-08	1000	12/29/2011	22	2.0	423	0.8	ND	<0.0034
1201077-11	1003	01/03/2012	17	2.0	600	1.2	1.5	<0.0022
1201077-14	1006	01/03/2012	22	2.0	600	1.2	2.5	<0.0022
1201077-17	1009	01/04/2012	17	2.0	600	1.2	2.5	<0.0022
1201077-20	1012	01/04/2012	22	2.0	600	1.2	.5	<0.0022
1201130-01	1015	01/05/2012	17	2.0	600	1.2	2.5	<0.0022
1201130-04	1018	01/05/2012	22	2.0	600	1.2	1	<0.0022
1201204-01	1021	01/09/2012	17	2.0	600	1.2	8	0.0031
1201204-04	1024	01/09/2012	22	2.0	600	1.2	3	<0.0022
1201204-07	1027	01/10/2012	17	2.0	600	1.2	ND	<0.0022
1201204-10	1030	01/10/2012	22	2.0	600	1.2	5	<0.0022
1201204-13	1033	01/11/2012	17	2.0	600	1.2	3	<0.0022
1201204-16	1036	01/11/2012	22	2.0	600	1.2	2.5	<0.0022
1201249-01	1039	01/12/2012	17	2.0	600	1.2	2.5	<0.0022
1201249-04	1042	01/12/2012	22	2.0	600	1.2	5	<0.0022
1201249-07	1045	01/13/2012	17	2.0	472	0.9	2	<0.003
1201249-10	1048	01/13/2012	22	2.0	458	0.9	3	<0.003
1201249-10	1048	01/13/2012	22	2.0	458	0.9	3	<0.003
1201342-01	1051	01/16/2012	17	2.0	600	1.2	ND	<0.0022
1201342-04	1054	01/16/2012	22	2.0	600	1.2	2	<0.0022
1201342-07	1057	01/17/2012	17	2.0	600	1.2	3	<0.0022
1201342-10	1060	01/17/2012	22	2.0	600	1.2	3	<0.0022
1201342-13	1063	01/18/2012	17	2.0	600	1.2	6	0.0023
1201342-16	1066	01/18/2012	22	2.0	600	1.2	2.5	<0.0022
1201497-01	1069	01/19/2012	17	2.0	600	1.2	2.5	<0.0022
1201497-04	1072	01/19/2012	22	2.0	600	1.2	2	<0.0022
1201497-07	1075	01/24/2012	17	2.0	421	0.8	1.5	<0.0034

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1201497-10	1078	01/24/2012	22	2.0	417	0.8	4	<0.0034
1201581-01	1087	01/26/2012	17	2.0	600	1.2	4	<0.0022
1201581-04	1090	01/26/2012	22	2.0	600	1.2	3	<0.0022
1201581-07	1093	01/27/2012	17	2.0	424	0.8	2	<0.0034
1201581-10	1096	01/27/2012	22	2.0	422	0.8	1.5	<0.0034
1201581-13	1099	01/28/2012	17	2.0	414	0.8	1	<0.0034
1201581-16	1102	01/28/2012	22	2.0	418	0.8	2	<0.0034
1202082-01	1105	01/30/2012	17	2.0	600	1.2	5	<0.0022
1202082-04	1108	01/30/2012	22	2.0	600	1.2	2.5	<0.0022
1202082-07	1111	01/31/2012	17	2.0	600	1.2	1	<0.0022
1202082-10	1114	01/31/2012	22	2.0	600	1.2	2.5	<0.0022
1202124-01	1117	02/02/2012	17	2.0	600	1.2	2.5	<0.0022
1202124-04	1120	02/02/2012	22	2.0	600	1.2	2	<0.0022
1202124-07	1123	02/03/2012	17	2.0	428	0.9	3	<0.003
1202124-10	1126	02/03/2012	22	2.0	413	0.8	ND	<0.0034
1202220-01	1129	02/08/2012	17	2.0	600	1.2	5.5	<0.0022
1202220-04	1132	02/08/2012	22	2.0	600	1.2	2.5	<0.0022
1202279-01	1135	02/09/2012	17	2.0	600	1.2	3.5	<0.0022
1202279-04	1138	02/09/2012	22	2.0	600	1.2	1	<0.0022
1202279-07	1141	02/10/2012	17	2.0	409	0.8	1	<0.0034
1202279-10	1144	02/10/2012	22	2.0	370	0.7	2	<0.0039
1202389-01	1147	02/15/2012	17	2.0	600	1.2	1	<0.0022
1202389-04	1150	02/15/2012	22	2.0	600	1.2	ND	<0.0022
1202450-01	1153	02/16/2012	17	2.0	600	1.2	2.5	<0.0022
1202450-04	1156	02/16/2012	22	2.0	600	1.2	1.5	<0.0022
1202631-01	1159	02/23/2012	17	2.0	600	1.2	10	0.0039
1202631-04	1162	02/23/2012	22	2.0	600	1.2	2	<0.0022
1203404-01	1177	03/12/2012	17	2.0	600	1.2	ND	<0.0022
1203404-04	1180	03/12/2012	22	2.0	600	1.2	1	<0.0022
1203554-01	1183	03/20/2012	17	2.0	678	1.4	3	<0.0019
1203554-04	1186	03/20/2012	22	2.0	678	1.4	3.5	<0.0019
1205678-01	1198	05/21/2012	22	2.0	600	1.2	1.5	<0.0022
1205678-04	1201	05/21/2012	17	2.0	600	1.2	6.5	0.0026
1205678-07	1204	05/22/2012	22	2.0	600	1.2	8	0.0031
1205678-10	1207	05/22/2012	17	2.0	600	1.2	8.5	0.0033
1205678-13	1210	05/23/2012	22	2.0	600	1.2	5	<0.0022
1205678-16	1213	05/23/2012	17	2.0	600	1.2	6.5	0.0026
1205678-18	1216	05/24/2012	22	2.0	600	1.2	8	0.0031
1205678-21	1219	05/24/2012	17	2.0	600	1.2	9.8	0.0031
1205741-01	1231	05/25/2012	17	2.0	410	0.8	3.5	<0.0034
1205741-03	1234	05/25/2012	22	2.0	407	0.8	1	<0.0034
1206030-01	1228	05/29/2012	22	2.0	600	1.2	2	<0.0022
1206030-04	1237	05/29/2012	17	2.0	600	1.2	1	<0.0022
1206030-07	1234	05/30/2012	22	2.0	600	1.2	1	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1206030-09	1243	05/30/2012	17	2.0	600	1.2	2.5	<0.0022
1206118-01	1240	05/31/2012	22	2.0	600	1.2	4	<0.0022
1206118-04	1246	05/31/2012	17	2.0	600	1.2	2.5	<0.0039
1206118-07	1249	06/01/2012	22	2.0	374	0.7	3	<0.0022
1206118-10	1255	06/01/2012	17	2.0	402	0.8	2.5	<0.0034
1206224-01	1258	06/05/2012	22	2.0	600	1.2	5	<0.0022
1206224-04	1264	06/06/2012	17	2.1	600	1.3	1	<0.0021
1206224-07	1267	06/05/2012	22	2.0	600	1.2	7	0.0028
1206301-01	1270	06/07/2012	22	2.0	600	1.2	2	<0.0022
1206301-07	1279	06/07/2012	17	2.0	600	1.2	5	<0.0022
1206301-04	1276	06/08/2012	22	2.0	405	0.8	2.5	<0.0034
1206301-10	1285	06/08/2012	17	2.0	407	0.8	4	<0.0034
1206224-10	1273	06/06/2012	17	2.0	600	1.2	4.5	<0.0022
1206447-01	1282	06/11/2012	22	2.0	600	1.2	3	<0.0022
1206447-04	1291	06/11/2012	17	2.0	600	1.2	4.5	<0.0022
1206447-07	1288	06/12/2012	22	2.0	600	1.2	4	<0.0022
1206447-10	1297	06/12/2012	17	2.0	600	1.2	4.5	<0.0022
1206447-13	1294	06/13/2012	22	2.0	600	1.2	4	<0.0022
1206447-16	1303	06/13/2012	17	2.0	600	1.2	2	<0.0022
1206549-01	1300	06/14/2012	22	2.0	600	1.2	3.5	<0.0022
1206549-04	1306	06/15/2012	17	2.0	356	1.2	3	<0.0039
1206549-07	1309	06/14/2012	22	2.0	600	1.2	4	<0.0022
1206549-10	1315	06/15/2012	17	2.0	360	1.2	2.5	<0.0039
1206638-01	1321	06/18/2012	17	2.0	600	1.2	3.5	<0.0022
1206638-04	1312	06/18/2012	22	2.0	600	1.2	5.5	<0.0022
1206638-07	1327	06/19/2012	17	2.0	600	1.2	4	<0.0022
1206638-10	1318	06/19/2012	22	2.0	600	1.2	5	<0.0022
1206638-13	1333	06/20/2012	17	2.0	600	1.2	3.5	<0.0022
1206638-16	1324	06/20/2012	22	2.0	600	1.2	2.5	<0.0022
1206715-01	1330	06/21/2012	22	2.0	600	1.2	2	<0.0022
1206715-04	1336	06/22/2012	22	2.0	411	0.8	3.5	<0.0034
1206715-07	1339	06/21/2012	17	2.0	600	1.2	2	<0.0022
1206715-10	1345	06/22/2012	17	2.0	421	0.8	5	<0.0034
1206774-01	1351	06/25/2012	17	2.0	600	1.2	5.5	<0.0022
1206774-04	1342	06/25/2012	22	2.0	600	1.2	1.5	<0.0022
1206774-07	1357	06/26/2012	17	2.0	600	1.2	4.5	<0.0022
1206774-10	1348	06/26/2012	22	2.0	600	1.2	3	<0.0022
1206774-13	1363	06/27/2012	17	2.0	600	1.2	6	0.0023
1206774-16	1354	06/27/2012	22	2.0	600	1.2	3	<0.0022
1207043-01	1360	06/28/2012	17	2.0	600	1.2	2.5	<0.0022
1207043-04	1369	06/28/2012	22	2.0	600	1.2	6.5	0.0026
1207043-07	1366	06/29/2012	17	2.0	305	0.6	2	<0.0045
1207043-10	1375	06/29/2012	22	2.0	305	0.6	2	<0.0045

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1207099-01	1381	07/02/2012	17	2.0	600	1.2	7.5	0.003
1207099-04	1378	07/02/2012	22	2.0	600	1.2	3	<0.0022
1207261-01	1387	07/09/2012	17	2.0	600	1.2	3	<0.0022
1207261-04	1390	07/09/2012	22	2.0	600	1.2	8	0.0031
1207261-07	1384	07/10/2012	17	2.0	600	1.2	3.5	<0.0018
1207261-10	1393	07/10/2012	22	2.5	600	1.5	4	<0.0018
1207381-01	1396	07/11/2012	17	2.5	600	1.5	5	<0.0018
1207381-04	1402	07/12/2012	17	2.3	600	1.4	4.5	<0.0019
1207381-07	1399	07/11/2012	22	3.5	600	2.1	3.5	<0.0013
1207381-10	1405	07/12/2012	22	2.0	600	1.2	2.5	<0.0022
1207381-13	1408	07/13/2012	17	2.5	312	0.8	2.5	<0.0034
1207381-16	1411	07/13/2012	22	3.3	317	1.0	.5	<0.0027
1207500-01	1414	07/16/2012	17	2.5	600	1.5	2.5	<0.0018
1207500-04	1417	07/16/2012	22	2.0	600	1.2	4.5	<0.0022
1207500-07	1420	07/17/2012	17	2.5	600	1.5	4.5	<0.0018
1207500-10	1423	07/17/2012	22	2.5	600	1.5	2.5	<0.0018
1207500-13	1426	07/18/2012	17	2.5	600	1.5	2.5	<0.0018
1207500-15	1429	07/18/2012	22	2.5	600	1.5	.5	<0.0018
1207543-01	1432	07/19/2012	17	3.0	600	1.8	2	<0.0015
1207543-03	1435	07/19/2012	22	2.3	600	1.4	1	<0.0019
1207543-06	1438	07/20/2012	17	2.5	365	0.9	1	<0.003
1207543-09	1441	07/20/2012	22	2.5	403	1.0	ND	<0.0027
1207632-01	1444	07/23/2012	17	2.0	600	1.2	12	0.0047
1207632-04	1447	07/23/2012	22	2.0	600	1.2	2	<0.0022
1207632-07	1450	07/24/2012	17	2.0	600	1.2	8.5	0.0033
1207632-10	1453	07/24/2012	22	2.0	600	1.2	1	<0.0022
1207632-13	1456	07/25/2012	17	2.3	600	1.4	3.5	<0.0019
1207632-16	1459	07/25/2012	22	2.0	600	1.2	ND	<0.0022
1207722-01	1462	07/26/2012	17	2.3	600	1.4	2	<0.0019
1207722-03	1465	07/26/2012	22	2.3	600	1.4	3.5	<0.0019
1207722-06	1468	07/27/2012	17	2.3	454	1.0	3	<0.0027
1207722-08	1471	07/27/2012	22	2.5	434	1.1	2.5	<0.0025
1208110-01	1474	07/30/2012	17	2.5	600	1.5	1	<0.0018
1208110-03	1477	07/30/2012	22	2.5	600	1.5	2	<0.0018
1208110-06	1480	07/31/2012	17	2.0	600	1.2	4	<0.0022
1208110-08	1483	07/31/2012	22	2.5	600	1.5	2.5	<0.0018
1208110-11	1486	08/01/2012	17	2.5	600	1.5	4.5	<0.0018
1208110-13	1489	08/01/2012	22	2.5	600	1.5	1	<0.0018
1208144-01	1492	08/02/2012	17	2.5	600	1.5	6.5	0.0021
1208144-03	1495	08/02/2012	22	2.5	600	1.5	6	0.0019
1208144-06	1498	08/03/2012	17	2.5	413	1.0	1.5	<0.0027
1208144-08	1501	08/03/2012	22	2.5	422	1.1	1.5	<0.0025
1208252-01	1504	08/06/2012	17	2.5	600	1.5	1.5	<0.0018
1208252-03	1507	08/06/2012	22	2.5	600	1.5	1	<0.0018

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1208252-06	1510	08/07/2012	17	2.5	600	1.5	4.5	<0.0018
1208252-08	1513	08/07/2012	22	2.5	600	1.5	3.5	<0.0018
1208252-11	1516	08/08/2012	17	2.5	600	1.5	2	<0.0018
1208252-13	1519	08/08/2012	22	2.5	600	1.5	2.5	<0.0022
1208317-01	1522	08/09/2012	17	2.3	600	1.4	1	<0.0019
1208317-03	1525	08/09/2012	22	2.3	600	1.4	2.5	<0.0019
1208317-06	1528	08/10/2012	17	2.0	600	1.2	4	<0.0022
1208317-08	1531	08/10/2012	22	2.0	600	1.2	ND	<0.0022
1208400-01	1534	08/13/2012	17	2.5	600	1.5	1	<0.0018
1208400-02	1537	08/13/2012	22	2.3	600	1.4	.5	<0.0019
1208400-03	1540	08/14/2012	17	2.3	600	1.4	.5	<0.0019
1208400-05	1543	08/14/2012	22	2.3	600	1.4	1	<0.0019
1208400-08	1546	08/15/2012	17	2.3	600	1.4	3	<0.0022
1208400-10	1549	08/15/2012	22	2.3	600	1.4	1	<0.0019
1208477-01	1552	08/16/2012	17	2.3	600	1.4	7.5	0.0025
1208477-03	1555	08/16/2012	22	2.3	600	1.4	5	<0.0019
1208477-06	1558	08/17/2012	17	2.5	419	1.0	3.5	<0.0027
1208477-08	1561	08/17/2012	22	2.5	407	1.0	1	<0.0027
1208565-01	1564	08/20/2012	17	2.0	600	1.2	3.5	<0.0022
1208565-02	1567	08/20/2012	22	2.0	600	1.2	2	<0.0022
1208565-05	1570	08/21/2012	17	2.5	600	1.5	2	<0.0018
1208565-07	1573	08/21/2012	22	2.8	600	1.7	.5	<0.0016
1208565-10	1576	08/22/2012	17	2.3	600	1.4	2	<0.0019
1208565-12	1579	08/22/2012	22	2.5	600	1.5	2.5	<0.0018
1208608-01	1582	08/23/2012	17	2.5	600	1.5	1.5	<0.0018
1208608-03	1585	08/23/2012	22	2.5	600	1.5	2	<0.0018
1208608-06	1588	08/24/2012	17	3.0	339	1.0	3	<0.0027
1208608-08	1591	08/24/2012	22	2.5	331	0.8	3	<0.0034
1208710-01	1594	08/27/2012	17	2.3	600	1.4	2.5	<0.0019
1208710-03	1597	08/27/2012	22	2.5	600	1.5	5	<0.0018
1208710-06	1600	08/28/2012	17	2.5	600	1.5	2	<0.0018
1208710-08	1603	08/28/2012	22	2.5	600	1.5	4	<0.0018
1208710-11	1606	08/29/2012	17	2.0	600	1.2	6	0.0023
1208710-13	1609	08/29/2012	22	2.3	600	1.4	2	<0.0019
1209108-01	1612	08/30/2012	17	2.3	600	1.4	2	<0.0019
1209108-03	1615	08/30/2012	22	2.3	600	1.4	4.5	<0.0019
1209108-06	1618	08/31/2012	17	2.5	172	0.4	.5	<0.0067
1209108-08	1621	08/31/2012	22	2.5	136	0.3	1.5	<0.009
1209119-01	1624	09/04/2012	17	2.5	600	1.5	2.5	<0.0018
1209119-03	1627	09/04/2012	22	2.5	600	1.5	1	<0.0018
1209119-06	1630	09/05/2012	17	2.5	600	1.5	.5	<0.0018
1209119-08	1633	09/05/2012	22	2.5	600	1.5	2.5	<0.0018
1209170-01	1636	09/06/2012	17	2.5	600	1.5	ND	<0.0018
1209170-03	1639	09/06/2012	22	2.5	600	1.5	4.5	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1209170-06	1642	09/07/2012	17	2.5	381	1.0	1	<0.0027
1209170-08	1645	09/07/2012	22	2.5	360	0.9	2.5	<0.003
1209283-01	1648	09/10/2012	17	2.3	600	1.4	2	<0.0019
1209283-03	1651	09/10/2012	22	2.3	600	1.4	2	<0.0019
1209283-06	1654	09/11/2012	17	2.3	600	1.4	4	<0.0019
1209283-08	1657	09/11/2012	22	2.0	600	1.2	2	<0.0022
1209283-11	1660	09/12/2012	17	2.0	600	1.2	1.5	<0.0022
1209283-13	1663	09/12/2012	22	2.3	600	1.4	2	<0.0019
1209341-01	1666	09/13/2012	17	2.3	600	1.4	5	<0.0019
1209341-03	1669	09/13/2012	22	2.3	600	1.4	2	<0.0019
1209341-06	1672	09/14/2012	17	2.3	421	0.9	3.5	<0.003
1209341-08	1675	09/14/2012	22	2.3	412	0.9	2	<0.003
1209432-01	1678	09/17/2012	17	2.0	600	1.2	2	<0.0022
1209432-03	1681	09/17/2012	22	2.0	600	1.2	ND	<0.0022
1209432-06	1684	09/18/2012	17	2.3	600	1.4	7.5	0.0025
1209432-08	1687	09/18/2012	22	2.3	600	1.4	1.5	<0.0022
1209432-11	1690	09/19/2012	17	2.0	600	1.2	2.5	<0.0022
1209432-13	1693	09/19/2012	22	2.3	600	1.4	ND	<0.0019
1210077-01	1696	09/28/2012	17	2.0	333	0.7	2.5	<0.0039
1210077-03	1699	09/28/2012	22	2.3	321	0.7	1	<0.0039
1210164-01	1702	10/01/2012	17	2.4	600	1.4	4	<0.0019
1210164-03	1705	10/01/2012	22	2.1	600	1.3	4	<0.0021
1210164-06	1708	10/03/2012	17	2.0	600	1.2	4	<0.0022
1210164-08	1711	10/03/2012	22	2.0	600	1.2	8.5	0.0033
1210206-01	1714	10/04/2012	17	3.0	600	1.8	ND	<0.0015
1210206-03	1717	10/04/2012	22	2.5	600	1.5	1	<0.0018
1210206-06	1720	10/05/2012	17	2.0	306	0.6	2	<0.0045
1210206-08	1723	10/05/2012	22	2.1	342	0.7	.5	<0.0039
1210324-01	1726	10/08/2012	17	2.0	600	1.2	.5	<0.0022
1210324-03	1729	10/08/2012	22	2.0	600	1.2	.5	<0.0022
1210324-06	1732	10/09/2012	17	2.8	600	1.7	1.5	<0.0016
1210324-08	1735	10/09/2012	22	2.3	600	1.4	1	<0.0019
1210324-11	1738	10/10/2012	17	2.3	600	1.4	3	<0.0019
1210324-13	1741	10/10/2012	22	2.1	600	1.3	1.5	<0.0021
1210386-01	1744	10/11/2012	17	2.3	600	1.4	ND	<0.0019
1210386-03	1750	10/12/2012	17	2.3	360	0.8	1	<0.0034
1210386-05	1753	10/12/2012	22	2.5	345	0.9	ND	<0.003
1210457-01	1756	10/15/2012	17	2.0	600	1.2	3	<0.0022
1210457-03	1759	10/15/2012	22	2.0	600	1.2	.5	<0.0022
1210457-06	1762	10/16/2012	17	2.0	600	1.2	.5	<0.0022
1210457-08	1765	10/16/2012	22	2.3	600	1.4	3	<0.0019
1210457-11	1768	10/17/2012	17	2.3	600	1.4	4.5	<0.0019
1210457-13	1771	10/17/2012	22	2.8	600	1.7	3.5	<0.0016
1210522-01	1774	10/18/2012	17	2.0	600	1.2	4	<0.0022

Asbestos

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 0.1 fiber/cc

Sample, Date and Station Information				Sampler Run Information			Asbestos Fibers	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Asbestos (fibers)	Conc Asbestos (fibers/cc)
1210522-03	1777	10/18/2012	22	2.3	600	1.4	1.5	<0.0019
1210522-06	1780	10/19/2012	17	2.4	316	0.8	2.5	<0.0034
1210522-08	1783	10/19/2012	22	2.3	313	0.7	1.5	<0.0039
1210614-01	1786	10/23/2012	17	2.4	465	1.1	1	<0.0025
1210614-03	1789	10/23/2012	22	2.2	465	1.0	12.5	0.0059
1210614-06	1792	10/24/2012	17	2.0	600	1.2	.5	<0.0022
1210614-08	1795	10/24/2012	22	2.0	600	1.2	3	<0.0022
1211059-01	1804	10/29/2012	17	2.3	600	1.4	8.5	0.0029
1211059-03	1807	10/29/2012	22	2.0	600	1.2	1	<0.0022
1211059-06	1810	10/30/2012	17	2.2	600	1.3	4.5	<0.0021
1211059-08	1813	10/30/2012	22	2.3	600	1.4	3	<0.0019
1211059-11	1816	10/31/2012	17	2.0	498	1.0	1.5	<0.0027
1211059-12	1819	10/31/2012	22	2.4	481	1.2	2	<0.0022
1211110-01	1822	11/01/2012	17	2.0	600	1.2	1	<0.0022
1211110-03	1825	11/01/2012	22	2.3	600	1.4	2.5	<0.0019
1211110-06	1828	11/02/2012	17	2.0	376	0.8	6	0.0035
1211110-08	1831	11/02/2012	22	2.0	363	0.7	3	<0.0019
1211228-01	1834	11/05/2012	17	2.3	600	1.4	9.5	0.0032
1211228-03	1837	11/05/2012	22	2.8	600	1.7	4	<0.0016
1211228-06	1840	11/06/2012	17	2.0	600	1.2	7.5	0.003
1211228-08	1843	11/06/2012	22	2.2	600	1.3	6	0.0022
1211228-11	1846	11/07/2012	17	2.3	600	1.4	1.5	<0.0019
1211228-13	1849	11/07/2012	22	2.2	600	1.3	1.5	<0.0021
1211284-01	1852	11/08/2012	17	2.0	600	1.2	3	NA
1211284-03	1855	11/08/2012	22	2.3	600	1.4	2	NA
1211284-06	1858	11/09/2012	17	2.3	369	0.8	ND	NA
1211284-08	1861	11/09/2012	22	2.4	370	0.9	1	NA
1211356-01	1864	11/12/2012	17	2.0	600	1.2	ND	<0.0022
1211356-03	1867	11/12/2012	22	2.0	600	1.2	ND	<0.0022
1211356-06	1873	11/13/2012	22	2.0	600	1.2	2.5	<0.0022

l/min = liters per minute

min = minutes

m³ = cubic meters

mg = milligrams

mg/m³ = milligrams per cubic meter

ug = micrograms

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1011112-05	0095	11/01/2010	18	1197.9	318	376.6	16	0.042
1011170-02	0098	11/02/2010	17	1134.2	1452	1628.3	73	0.045
1011170-05	0101	11/02/2010	18	1154.0	600	684.6	81	0.049
1011170-08	0104	11/03/2010	17	1166.8	1434	1654.3	81	0.049
1011170-11	0107	11/03/2010	18	1154.0	600	684.6	59	0.036
1011258-02	0110	11/04/2010	17	1162.5	1404	1613.8	61	0.038
1011258-05	0113	11/04/2010	18	1172.4	588	681.6	32	0.047
1011258-08	0116	11/05/2010	17	1121.5	414	459.0	18	0.039
1011258-11	0119	11/05/2010	18	1141.3	414	467.2	17	0.036
1011258-14	0122	11/08/2010	17	1147.0	1374	1558.1	39	0.025
1011258-17	0125	11/08/2010	18	1151.2	1386	1577.5	33	0.021
1011334-02	0128	11/09/2010	17	1606.1	467	1434.0	29	0.018
1011334-05	0131	11/09/2010	18	1613.4	408	1428.0	20	0.012
1011334-08	0134	11/10/2010	17	1622.9	491	1440.0	32	0.020
1011334-11	0137	11/10/2010	18	1000.8	423	852.0	20	0.020
1011376-02	0140	11/11/2010	17	1130.0	1410	1575.3	43	0.027
1011376-05	0143	11/11/2010	18	597.6	942	556.5	26	0.047
1011376-08	0146	11/12/2010	17	1144.1	348	393.7	24	0.061
1011376-11	0149	11/12/2010	18	1155.5	246	281.0	16	0.057
1011484-02	0152	11/15/2010	17	1162.5	1428	1641.3	74	0.045
1011484-05	0155	11/15/2010	18	603.2	882	526.0	34	0.065
1011484-08	0158	11/16/2010	17	1131.4	1416	1582.4	61	0.039
1011484-11	0161	11/16/2010	18	1134.2	504	570.4	23	0.040
1011484-14	0164	11/17/2010	17	1154.0	1446	1649.9	45	0.027
1011484-17	0167	11/17/2010	18	1135.6	1446	1623.6	46	0.028
1011547-02	0170	11/18/2010	17	1156.9	1422	1626.5	39	0.024
1011547-05	0173	11/18/2010	18	1144.1	1410	1595.0	38	0.024
1011547-08	0176	11/19/2010	17	1138.5	384	432.2	18	0.042
1011547-11	0179	11/19/2010	18	1141.3	378	426.5	9.0	0.021
1011649-02	0182	11/24/2010	17	1127.1	426	474.7	16	0.034
1011649-05	0185	11/24/2010	18	1168.2	378	436.6	15	0.034
1012048-02	0188	11/29/2010	17	1155.5	1428	1631.3	28	0.017
1012048-05	0191	11/29/2010	18	1132.8	1434	1606.1	16	0.010
1012048-08	0194	11/30/2010	17	1130.0	1440	1608.8	54	0.034
1012048-11	0197	11/30/2010	18	1138.5	1440	1620.9	62	0.038
1012048-14	0200	12/01/2010	17	1135.6	1410	1583.1	93	0.060
1012048-17	0203	12/01/2010	18	1164.0	1374	1581.2	77	0.049
1012173-02	0206	12/02/2010	17	1132.8	1404	1572.5	40	0.025
1012173-05	0209	12/02/2010	18	1210.7	0	0.0	NA	0
1012173-08	0212	12/06/2010	17	1149.8	1446	1643.8	34	0.021
1012173-11	0215	12/06/2010	18	1180.9	1278	1492.2	27	0.018
1012233-02	0218	12/07/2010	17	1149.8	1434	1630.2	25	0.016
1012233-05	0221	12/07/2010	18	1168.2	1392	1607.8	16	0.010
1012325-02	0224	12/13/2010	17	1164.0	1458	1677.9	30	0.018
1012325-05	0227	12/13/2010	18	1158.3	1458	1669.7	37	0.022

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1012394-02	0230	12/14/2010	17	1120.1	1398	1548.1	41	0.026
1012394-05	0233	12/14/2010	18	1132.8	1404	1572.5	26	0.016
1012394-08	0236	12/15/2010	17	1130.0	1446	1615.5	62	0.038
1012394-11	0239	12/15/2010	18	1152.6	1446	1647.9	64	0.039
1012451-02	0242	12/16/2010	17	1156.9	1440	1647.1	22	0.013
1012451-05	0245	12/16/2010	18	1141.3	1434	1618.1	27	0.017
1101090-02	0248	01/03/2011	17	1154.0	1416	1615.7	44	0.027
1101090-05	0251	01/03/2011	18	1144.1	1422	1608.6	35	0.022
1101090-08	0254	01/04/2011	17	1141.3	1452	1638.4	39	0.024
1101090-11	0257	01/04/2011	18	1134.2	1410	1581.2	32	0.020
1101090-14	0260	01/05/2011	17	1127.1	1410	1571.3	43	0.027
1101090-17	0263	01/05/2011	20	1151.2	1386	1577.5	34	0.022
1101152-02	0266	01/06/2011	17	1152.6	1434	1634.2	ND	<0.00061
1101152-05	0269	01/06/2011	20	1138.5	1428	1607.4	32	0.020
1101152-08	0272	01/07/2011	17	1132.8	510	571.2	30	0.053
1101152-11	0275	01/07/2011	20	1145.5	504	570.8	18	0.032
1101221-04	0281	01/10/2011	20	1193.7	1428	1685.3	14	0.0083
1101221-07	0284	01/11/2011	17	1145.5	1440	1630.9	23	0.014
1101221-10	0287	01/11/2011	20	1154.0	1410	1608.8	28	0.017
1101221-13	0290	01/12/2011	17	1141.3	1452	1638.4	41	0.025
1101221-16	0293	01/12/2011	20	1141.3	1440	1624.9	ND	<0.00062
1101323-02	0296	01/13/2011	17	1110.1	1446	1587.1	24	0.015
1101323-05	0299	01/13/2011	20	1137.0	1446	1625.6	30	0.018
1101323-08	0302	01/14/2011	17	1179.5	420	489.8	7.0	0.014
1101323-11	0305	01/14/2011	20	1147.0	396	449.1	6.0	0.013
1101323-14	0308	01/17/2011	17	1122.9	1458	1618.7	3.0	0.0019
1101323-17	0311	01/17/2011	20	1190.9	1494	1759.0	5.0	0.0028
1101429-02	0314	01/18/2011	17	1159.7	1422	1630.5	29	0.018
1101429-05	0317	01/18/2011	20	1152.6	1410	1606.8	34	0.021
1101429-08	0320	01/19/2011	17	1147.0	1434	1626.2	31	0.019
1101429-11	0323	01/19/2011	20	1137.0	1446	1625.6	29	0.018
1101447-02	0326	01/20/2011	17	1135.6	1416	1589.9	30	0.019
1101447-05	0329	01/20/2011	20	1142.7	1368	1545.6	33	0.021
1101447-08	0332	01/21/2011	17	1154.0	420	479.2	20	0.042
1101447-11	0335	01/21/2011	20	1148.4	414	470.1	18	0.038
1101561-02	0338	01/25/2011	17	1169.6	1434	1658.3	33	0.020
1101561-05	0341	01/25/2011	20	1199.4	1434	1700.4	50	0.029
1101561-08	0344	01/26/2011	17	1132.8	1434	1606.1	32	0.020
1101561-11	0347	01/26/2011	20	1138.5	1434	1614.1	43	0.027
1102066-02	0350	01/27/2011	17	1138.5	1416	1593.8	27	0.017
1102066-05	0353	01/27/2011	20	1145.5	1410	1597.0	33	0.021
1102066-08	0356	01/28/2011	17	1155.5	420	479.8	15	0.031
1102066-11	0359	01/28/2011	20	1138.5	390	439.0	13	0.030
1102164-02	0362	01/31/2011	17	1173.9	1446	1678.2	23	0.014
1102164-05	0365	01/31/2011	20	1162.5	1452	1668.9	28	0.017

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1102164-08	0368	02/01/2011	17	1141.3	1404	1584.3	65	0.041
1102164-11	0371	02/01/2011	20	1138.5	1410	1587.1	49	0.031
1102164-14	0374	02/02/2011	17	1138.5	1440	1620.9	63	0.039
1102164-17	0377	02/02/2011	20	1149.8	1434	1630.2	34	0.021
1102164-20	0380	02/03/2011	17	1148.4	1416	1607.7	43	0.027
1102164-23	0383	02/03/2011	20	1149.8	1434	1630.2	25	0.015
1102271-05	0389	02/04/2011	20	1141.3	378	426.5	16	0.038
1102271-08	0392	02/07/2011	17	1137.0	1446	1625.6	44	0.027
1102271-11	0395	02/07/2011	20	1164.0	1476	1698.6	44	0.026
1102271-14	0398	02/08/2011	17	1138.5	1362	1533.1	49	0.032
1102271-17	0401	02/08/2011	20	1149.8	1338	1521.0	41	0.027
1102465-02	0404	02/09/2011	17	1132.8	1446	1619.5	32	0.020
1102465-05	0407	02/09/2011	20	1149.8	1434	1630.2	28	0.017
1102465-08	0410	02/10/2011	17	1134.2	1404	1574.4	28	0.018
1102465-11	0413	02/10/2011	20	1148.4	1398	1587.3	20	0.013
1102465-14	0416	02/11/2011	17	1139.9	426	480.1	16	0.033
1102465-17	0419	02/11/2011	20	1149.8	402	457.0	15	0.033
1102668-02	0422	02/21/2011	17	1155.5	1362	1555.9	16	0.010
1102668-05	0425	02/21/2011	20	1155.5	1326	1514.8	16	0.011
1102668-08	0428	02/22/2011	17	1131.4	1500	1677.9	24	0.014
1102668-11	0431	02/22/2011	20	1135.6	1512	1697.7	28	0.016
1102668-14	0434	02/23/2011	17	1139.9	1350	1521.5	29	0.019
1102668-17	0437	02/23/2011	20	1137.0	1344	1510.9	34	0.023
1103069-02	0440	02/28/2011	17	1120.1	1428	1581.4	35	0.022
1103069-05	0443	02/28/2011	20	1152.6	1446	1647.9	30	0.018
1103069-08	0446	03/01/2011	17	1138.5	1452	1634.4	32	0.020
1103069-11	0449	03/01/2011	20	1134.2	1440	1614.8	31	0.019
1103188-02	0452	03/03/2011	17	1155.5	1446	1651.9	29	0.018
1103188-05	0455	03/03/2011	20	1141.3	1470	1658.7	30	0.018
1103188-08	0458	03/04/2011	17	1156.9	390	446.1	12	0.027
1103545-02	0464	03/07/2011	17	1130.0	1476	1649.0	21	0.013
1103545-05	0467	03/07/2011	20	1165.4	1386	1596.9	21	0.013
1103545-08	0470	03/08/2011	17	1151.2	1344	1529.7	22	0.014
1103545-11	0473	03/08/2011	20	1145.5	1296	1467.8	29	0.020
1103545-14	0476	03/09/2011	17	1145.5	1428	1617.4	26	0.016
1103545-17	0479	03/09/2011	20	1151.2	1422	1618.5	31	0.019
1103545-20	0482	03/10/2011	17	1156.9	1404	1605.9	23	0.014
1103545-23	0485	03/10/2011	20	1154.0	1458	1663.6	34	0.020
1103545-26	0488	03/11/2011	17	1135.6	426	478.3	13	0.027
1103545-29	0491	03/11/2011	20	1134.2	378	423.9	16	0.038
1103545-32	0494	03/17/2011	17	1149.8	1398	1589.2	33	0.021
1103545-35	0497	03/17/2011	20	1165.4	1392	1603.9	37	0.023
1103791-02	0500	03/28/2011	17	1144.1	1476	1669.7	29	0.0017
1103791-05	0503	03/28/2011	20	1151.2	1476	1680.0	31	0.018
1103791-08	0506	03/29/2011	17	1130.0	1446	1615.5	33	0.021

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1103791-11	0509	03/29/2011	20	1137.0	1458	1639.1	36	0.022
1104064-02	0512	03/30/2011	17	1137.0	1422	1598.6	38	0.023
1104064-05	0515	03/30/2011	20	1134.2	1410	1581.2	36	0.023
1104064-08	0518	03/31/2011	17	1139.9	1410	1589.1	37	0.023
1104064-11	0521	03/31/2011	20	1138.5	1374	1546.6	51	0.033
1104064-14	0524	04/01/2011	17	1130.0	408	455.8	15	0.033
1104064-17	0527	04/01/2011	20	1139.9	408	459.8	16	0.035
1104167-02	0530	04/04/2011	17	1152.6	1404	1600.0	47	0.030
1104167-05	0533	04/04/2011	20	1139.9	408	459.8	42	0.026
1104167-08	0536	04/05/2011	17	1141.3	1446	1631.7	55	0.034
1104167-11	0539	04/05/2011	20	1142.7	1416	1599.8	58	0.036
1104167-14	0542	04/06/2011	17	1158.3	1422	1628.5	120	0.073
1104167-17	0545	04/06/2011	20	1149.8	984	1118.6	61	0.054
1104340-02	0548	04/08/2011	17	1161.1	444	509.7	5.9	0.012
1104340-05	0551	04/08/2011	20	1144.1	396	448.0	3.9	0.0087
1104340-08	0554	04/11/2011	17	1137.0	1422	1598.6	28	0.018
1104340-11	0557	04/11/2011	20	1147.0	1422	1612.5	32	0.020
1104340-14	0560	04/12/2011	17	1152.6	1428	1627.3	29	0.018
1104340-17	0563	04/12/2011	20	1144.1	1386	1567.8	43	0.026
1104472-02	0566	04/13/2011	14	1152.6	1428	1627.3	19	0.012
1104472-05	0569	04/13/2011	20	1186.6	1488	1745.7	23	0.015
1104472-08	0572	04/14/2011	14	1162.5	1434	1648.2	28	0.017
1104472-11	0575	04/14/2011	20	1137.0	1386	1558.1	31	0.020
1104472-14	0578	04/15/2011	14	1138.5	1386	1560.1	19	0.012
1104472-17	0581	04/15/2011	20	1141.3	1332	1503.0	18	0.012
1104472-20	0584	04/16/2011	14	1159.7	354	405.9	4.6	0.011
1104472-23	0587	04/16/2011	20	1141.3	408	460.4	5.1	0.011
1104472-26	0590	04/18/2011	14	1127.1	1410	1571.3	9.5	0.0060
1104472-29	0593	04/18/2011	20	1152.6	1428	1627.3	9.6	0.0059
1104642-02	0596	04/19/2011	14	1139.9	1476	1663.5	20	0.012
1104642-05	0599	04/19/2011	20	1135.6	1452	1630.3	21	0.013
1104642-08	0602	04/20/2011	14	1149.8	1374	1562.0	14	0.0088
1104642-11	0605	04/20/2011	20	1138.5	1416	1593.8	14	0.0088
1104642-14	0608	04/21/2011	14	1144.1	402	454.7	8.0	0.018
1104713-02	0614	04/26/2011	14	1145.5	1410	1597.0	34	0.021
1104713-05	0617	04/26/2011	20	1165.4	1422	1638.4	38	0.023
1104713-08	0620	04/27/2011	14	1137.0	1422	1598.6	29	0.018
1104713-11	0623	04/27/2011	20	1169.6	1074	1242.0	26	0.021
1105059-02	0626	04/28/2011	14	1127.1	1374	1531.2	39	0.026
1105059-05	0629	04/28/2011	20	1392.0	1392	1578.5	17	0.011
1105059-08	0632	04/29/2011	14	1135.6	468	525.5	12	0.023
1105059-11	0635	04/29/2011	20	1122.9	378	419.7	8.4	0.020
1105193-02	0638	05/02/2011	14	1145.5	1368	1549.4	30	0.019
1105193-05	0641	05/02/2011	20	1149.8	1320	1500.6	35	0.023
1105193-08	0644	05/03/2011	14	1125.7	1386	1542.6	41	0.027

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1105193-11	0647	05/03/2011	20	1134.2	1470	1648.5	69	0.042
1105193-14	0650	05/04/2011	14	1120.1	1422	1574.7	37	0.024
1105193-17	0653	05/04/2011	20	1145.5	1446	1637.7	58	0.035
1105193-20	0656	05/05/2011	14	1144.1	1464	1656.1	51	0.031
1105193-23	0659	05/05/2011	20	1175.3	1194	1387.4	69	0.050
1109373-02	0662	09/12/2011	17	1137.0	1422	1598.6	38	0.024
1109373-05	0665	09/12/2011	22	1165.4	1134	1306.6	32	0.025
1109373-08	0668	09/13/2011	17	1139.9	1380	1555.3	33	0.021
1109373-11	0671	09/13/2011	22	1138.5	1374	1546.6	32	0.020
1109373-14	0674	09/14/2011	17	1139.9	1512	1704.0	49	0.029
1109373-17	0677	09/14/2011	22	1111.6	1500	1648.5	35	0.021
1109536-02	0680	09/15/2011	17	1139.9	1512	1704.0	36	0.024
1109536-05	0683	09/15/2011	22	1111.6	1500	1648.5	43	0.027
1109536-08	0686	09/16/2011	17	1137.0	420	472.2	19	0.039
1109536-11	0689	09/16/2011	22	1147.0	396	449.1	13	0.028
1109538-02	0692	09/19/2011	17	1169.6	1398	1616.6	41	0.025
1109538-05	0695	09/19/2011	22	1147.0	396	449.1	52	0.032
1109538-08	0698	09/20/2011	17	1169.6	1398	1616.6	35	0.021
1109538-11	0701	09/20/2011	22	1152.6	1404	1600.0	44	0.026
1109538-14	0704	09/21/2011	17	1132.8	1398	1565.8	27	0.017
1109538-17	0707	09/21/2011	22	1139.9	1404	1582.3	67	0.042
1109592-02	0710	09/22/2011	17	1132.8	1398	1565.8	22	0.014
1109592-05	0713	09/22/2011	22	1139.9	1404	1582.3	25	0.016
1109592-08	0716	09/23/2011	17	1142.7	420	474.5	13	0.028
1109592-11	0719	09/23/2011	22	1134.2	414	464.3	16	0.035
1109701-02	0722	09/26/2011	17	1159.7	1434	1644.2	26	0.016
1109701-05	0725	09/26/2011	22	1162.5	1440	1655.1	32	0.020
1109701-08	0728	09/27/2011	17	1107.3	1410	1543.7	36	0.023
1109701-11	0731	09/27/2011	22	1138.5	1398	1573.6	48	0.031
1109701-14	0734	09/28/2011	17	1134.2	1434	1608.1	33	0.021
1109701-17	0737	09/28/2011	22	1138.5	1434	1614.1	56	0.035
1110043-02	0740	09/29/2011	17	1134.2	1434	1608.1	22	0.014
1110043-05	0743	09/29/2011	22	1138.5	1434	1614.1	28	0.018
1110043-08	0746	09/30/2011	17	1145.5	414	468.9	9.4	0.020
1110043-11	0749	09/30/2011	22	1141.3	408	460.4	7.4	0.016
1110175-02	0752	10/03/2011	17	1173.9	1434	1664.3	11	0.0066
1110175-05	0755	10/03/2011	22	1152.6	1434	1634.2	12	0.0075
1110605-02	0758	10/20/2011	17	1145.5	1452	1644.5	27	0.016
1110605-05	0761	10/20/2011	22	1152.6	1434	1634.2	31	0.019
1110605-08	0764	10/21/2011	17	1132.8	396	443.5	8.7	0.020
1110605-11	0767	10/21/2011	22	1134.2	390	437.3	10	0.024
1110605-14	0770	10/24/2011	17	1135.6	1404	1576.4	31	0.020
1110605-17	0773	10/24/2011	22	1155.5	1410	1610.8	37	0.023
1110711-02	0776	10/25/2011	17	1145.5	1434	1624.1	68	0.042
1110711-05	0779	10/25/2011	22	1135.6	1440	1616.8	40	0.025

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1110711-08	0782	10/26/2011	17	1124.3	1428	1587.4	34	0.021
1110711-11	0785	10/26/2011	22	1137.0	1428	1605.4	34	0.021
1111056-02	0788	10/27/2011	17	1132.8	1446	1619.5	36	0.022
1111056-05	0791	10/27/2011	22	1132.8	1434	1606.1	47	0.029
1111056-08	0794	10/28/2011	17	1128.6	420	468.6	18	0.037
1111056-11	0797	10/28/2011	22	1134.2	420	471.0	13	0.027
1111056-14	0800	10/31/2011	17	1128.6	1482	1653.6	43	0.026
1111056-17	0803	10/31/2011	22	1141.3	1488	1679.1	50	0.030
1111122-02	0806	11/01/2011	17	1130.0	1374	1535.0	33	0.021
1111122-05	0809	11/01/2011	22	1135.6	1374	1542.7	39	0.026
1111122-08	0812	11/02/2011	17	1125.7	1422	1582.7	32	0.020
1111122-11	0815	11/02/2011	22	1132.8	1422	1592.6	37	0.023
1111200-02	0818	11/03/2011	17	1132.8	3108	3481.0	45	0.013
1111200-05	0821	11/03/2011	22	1135.6	3090	3469.5	40	0.012
1111290-02	0824	11/07/2011	17	1134.2	1380	1547.5	21	0.013
1111290-05	0827	11/07/2011	22	1141.3	1374	1550.4	18	0.011
1111290-08	0830	11/08/2011	17	1134.2	1128	1264.9	15	0.012
1111290-11	0833	11/08/2011	22	1138.5	1458	1641.1	26	0.016
1111290-14	0836	11/09/2011	CTO5 10B	1161.1	1350	1549.8	25	0.016
1111290-17	0839	11/09/2011	22	1141.3	1476	1665.5	50	0.030
1111349-02	0842	11/10/2011	CTO5 10B	1134.2	1392	1561.0	28	0.018
1111349-05	0845	11/10/2011	22	1148.4	1386	1573.7	49	0.031
1111349-08	0848	11/11/2011	CTO5 10B	1134.2	444	497.9	4.2	0.0084
1111349-11	0851	11/11/2011	22	1148.4	468	531.4	5.6	0.011
1111463-02	0854	11/14/2011	CTO5 10B	1135.6	1422	1596.6	26	0.016
1111463-05	0857	11/14/2011	22	1137.0	1434	1612.1	37	0.023
1111463-08	0860	11/15/2011	CTO5 10B	1130.0	1446	1615.5	25	0.016
1111463-11	0863	11/15/2011	22	1134.2	1446	1621.5	30	0.019
1111463-14	0866	11/16/2011	CTO5 10B	1145.5	1422	1610.6	20	0.012
1111463-17	0869	11/16/2011	22	1132.8	1440	1612.8	23	0.015
1111569-02	0872	11/17/2011	CTO5 10B	1147.0	1386	1571.7	12	0.0076
1111569-05	0875	11/17/2011	22	1139.9	1374	1548.5	15	0.0094
1111569-08	0878	11/21/2011	CTO5 10B	1132.8	1422	1592.6	11	0.0068
1111569-11	0881	11/21/2011	22	1134.2	1398	1567.7	17	0.011
1112042-02	0884	11/28/2011	CTO5 10B	1132.8	1428	1599.4	17	0.011
1112042-05	0887	11/28/2011	22	1142.7	1536	1735.4	38	0.022
1112042-08	0890	11/29/2011	CTO5 10B	1134.2	1422	1594.6	13	0.0084
1112042-11	0893	11/29/2011	22	1135.6	1356	1522.5	21	0.014
1112042-14	0896	11/30/2011	CTO5 10B	1134.2	1356	1520.6	17	0.011
1112042-17	0899	11/30/2011	22	1142.7	1428	1613.4	30	0.019
1112128-02	0902	12/01/2011	CTO5 10B	1144.1	1428	1615.4	21	0.013
1112128-05	0905	12/01/2011	22	1189.4	1338	1573.5	21	0.014
1112128-08	0908	12/02/2011	CTO5 10B	1161.1	390	447.7	6.8	0.015
1112128-11	0911	12/02/2011	22	1141.3	354	399.5	3.6	0.0090
1112128-14	0914	12/05/2011	CTO5 10B	1152.6	1278	1456.4	24	0.016

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1112128-17	0914	12/05/2011	22	1145.5	1266	1433.9	36	0.025
1112199-02	0920	12/06/2011	17	1134.2	1326	1487.0	34	0.023
1112199-05	0923	12/06/2011	22	1135.6	1350	1515.8	49	0.032
1112199-08	0926	12/07/2011	17	1138.5	1500	1688.4	36	0.022
1112199-11	0929	12/07/2011	22	1141.3	1500	1692.6	45	0.026
1112269-02	0932	12/08/2011	17	1134.2	1446	1621.5	43	0.026
1112269-05	0935	12/08/2011	22	1137.0	1452	1632.3	70	0.043
1112269-07	0938	12/09/2011	17	1148.4	360	408.7	7.1	0.017
1112269-09	0941	12/09/2011	22	1139.9	354	399.0	20	0.050
1112374-02	0944	12/13/2011	17	1124.3	1446	1607.4	25	0.016
1112374-05	0947	12/13/2011	22	1131.4	1446	1617.5	43	0.026
1112374-08	0950	12/14/2011	17	1148.4	1452	1648.6	22	0.014
1112374-11	0953	12/14/2011	22	1138.5	1446	1627.6	39	0.024
1112502-02	0956	12/16/2011	17	1132.8	474	530.9	9.4	0.018
1112502-05	0959	12/16/2011	22	1141.3	474	534.9	8.1	0.015
1112502-08	0962	12/19/2011	17	1154.0	1542	1759.4	26	0.015
1112502-11	0965	12/19/2011	22	1131.4	1500	1677.9	30	0.018
1112574-02	0968	12/20/2011	17	1132.8	1290	1444.8	30	0.021
1112574-05	0971	12/20/2011	22	1132.8	1320	1478.4	47	0.032
1112574-08	0974	12/21/2011	17	1132.8	1428	1599.4	51	0.032
1112574-11	0977	12/21/2011	22	1132.8	1320	1478.4	33	0.022
1112574-14	0980	12/22/2011	17	1132.8	1464	1639.7	22	0.013
1112574-17	0983	12/22/2011	22	1132.8	1308	1465.0	26	0.018
1112574-20	0986	12/27/2011	17	1132.8	1428	1599.4	19	0.012
1112574-23	0989	12/27/2011	22	1132.8	1428	1599.4	26	0.016
1201077-02	0992	12/28/2011	17	1132.8	1422	1592.6	14	0.0089
1201077-05	0995	12/28/2011	22	1132.5	1422	1600.6	20	0.012
1201077-09	1001	12/29/2011	22	1145.5	420	475.7	3.8	0.0079
1201077-12	1004	01/03/2012	17	1139.9	1446	1629.6	24	0.015
1201077-15	1007	01/03/2012	22	1132.8	1452	1626.2	39	0.024
1201077-18	1010	01/04/2012	17	1132.8	1434	1606.1	26	0.016
1201077-21	1013	01/04/2012	22	1148.4	1428	1621.4	32	0.019
1201130-02	1016	01/05/2012	17	1138.5	552	621.3	12	0.020
1201130-05	1019	01/05/2012	22	1142.7	1494	1687.9	49	0.029
1201204-02	1022	01/09/2012	17	1134.2	1440	1614.8	46	0.029
1201204-05	1025	01/09/2012	22	1145.5	1446	1637.7	68	0.041
1201204-08	1028	01/10/2012	17	1139.9	1476	1663.5	44	0.026
1201204-11	1031	01/10/2012	22	1139.9	1476	1663.5	68	0.041
1201204-14	1034	01/11/2012	17	1148.4	1398	1587.3	27	0.017
1201204-17	1037	01/11/2012	22	1138.5	1392	1566.8	42	0.027
1201249-02	1040	01/12/2012	17	1134.2	1428	1601.4	24	0.015
1201249-05	1043	01/12/2012	22	1139.9	1428	1609.4	50	0.031
1201249-08	1046	01/13/2012	17	1135.6	462	518.7	9.8	0.019
1201249-11	1049	01/13/2012	22	1138.5	444	499.8	17	0.033
1201342-02	1052	01/16/2012	17	1137.0	1446	1625.6	20	0.013

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1201342-05	1055	01/16/2012	22	1161.1	1452	1666.9	21	0.012
1201342-08	1058	01/17/2012	17	1134.2	1362	1527.3	16	0.010
1201342-11	1061	01/17/2012	22	1139.9	1356	1528.2	18	0.012
1201342-14	1064	01/18/2012	17	1147.0	1578	1789.5	17	0.0097
1201342-17	1067	01/18/2012	22	1134.2	1578	1769.6	20	0.011
1201497-02	1070	01/19/2012	17	1134.2	1338	1500.4	12	0.0078
1201497-05	1073	01/19/2012	22	1141.3	1308	1475.9	19	0.013
1201497-08	1076	01/24/2012	17	1151.2	426	484.9	9.2	0.019
1201497-11	1079	01/24/2012	22	1132.8	420	470.4	7.4	0.011
1201581-02	1088	01/26/2012	17	1154.0	1362	1554.0	11	0.0073
1201581-05	1091	01/26/2012	22	1135.6	1362	1529.3	9.0	0.0059
1201581-08	1094	01/27/2012	17	1122.9	426	472.9	2.5	0.0053
1201581-11	1097	01/27/2012	22	1139.9	426	480.1	1.1	0.0023
1201581-14	1100	01/28/2012	17	1166.8	414	477.6	2.1	0.0044
1201581-17	1103	01/28/2012	22	1156.9	420	480.4	ND	<0.0021
1202082-02	1106	01/30/2012	17	1132.8	1446	1619.5	16	0.0098
1202082-05	1109	01/30/2012	22	1131.4	1446	1617.5	16	0.0098
1202082-08	1112	01/31/2012	17	1139.9	1374	1548.5	12	0.0076
1202082-11	1115	01/31/2012	22	1144.1	1368	1547.5	10	0.0067
1202124-02	1118	02/02/2012	17	1134.2	1416	1587.9	18	0.012
1202124-05	1121	02/02/2012	22	1151.2	1422	1618.5	22	0.014
1202124-08	1124	02/03/2012	17	1152.6	432	492.3	5.9	0.012
1202124-11	1127	02/03/2012	22	1151.2	408	464.4	8.0	0.017
1202220-02	1130	02/08/2012	17	1132.8	1428	1599.4	18	0.011
1202220-05	1133	02/08/2012	22	1137.0	1428	1605.4	27	0.017
1202279-02	1136	02/09/2012	17	1132.8	1416	1585.9	22	0.014
1202279-05	1139	02/09/2012	22	1152.6	1416	1613.7	31	0.019
1202279-08	1142	02/10/2012	17	1139.9	402	453.1	4.5	0.0099
1202279-11	1145	02/10/2012	22	1141.3	378	426.5	7.6	0.018
1202389-02	1148	02/15/2012	17	1152.6	1482	1688.9	13	0.0078
1202389-05	1151	02/15/2012	22	1151.2	1488	1693.6	12	0.0071
1202450-02	1154	02/16/2012	17	1145.5	1350	1529.0	22	0.014
1202450-05	1157	02/16/2012	22	1148.4	1440	1635.0	26	0.016
1202631-02	1160	02/23/2012	17	1156.9	1482	1695.1	36	0.021
1202631-05	1163	02/23/2012	22	1132.8	1410	1579.2	35	0.022
1202631-07	1166	02/24/2012	17	1154.0	366	417.6	7.2	0.017
1202631-09	1169	02/24/2012	22	1142.7	360	406.7	3.4	0.0084
1203209-01	1172	03/06/2012	17	1137.0	1476	1659.3	32	0.019
1203209-03	1175	03/06/2012	22	1152.6	1470	1675.2	22	0.013
1203404-02	1178	03/12/2012	17	1151.2	1422	1618.5	25	0.016
1203404-05	1181	03/12/2012	22	1132.8	1422	1592.6	27	0.017
1203554-02	1184	03/20/2012	17	1144.1	1398	1581.4	24	0.015
1203554-05	1187	03/20/2012	22	1134.2	1398	1567.7	19	0.012
1205678-02	1199	05/21/2012	22	1132.8	1392	1559.0	1392	1559.04

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1205678-05	1202	05/21/2012	17	1132.8	672	752.6	672	752.64
1205678-08	1205	05/22/2012	22	1132.8	1380	1545.6	1380	1545.6
1205678-11	1208	05/22/2012	17	1132.8	1080	1209.6	1080	1209.6
1205678-14	1211	05/23/2012	22	1132.8	1452	1626.2	1452	1626.24
1205678-19	1217	05/24/2012	22	1132.8	1386	1552.3	1386	1552.32
1205741-04	1235	05/25/2012	22	1132.8	390	436.8	6.2	0.014
1206030-02	1229	05/29/2012	22	1132.8	1416	1635.5	17	0.010
1206030-05	1235	05/30/2012	22	1132.8	1416	1585.9	23	0.014
1206118-02	1241	05/31/2012	22	1132.8	1452	1626.2	22	0.013
1206118-05	1247	05/31/2012	17	1132.8	1404	1572.5	7.2	0.018
1206118-08	1250	06/01/2012	22	1132.8	366	409.9	5.9	0.0038
1206118-11	1256	06/01/2012	17	1132.8	378	423.4	3.6	0.0085
1206224-02	1259	06/05/2012	22	1132.8	1512	1693.4	8.3	0.0049
1206224-05	1265	06/06/2012	17	1161.1	1338	1536.0	10	0.068
1206224-08	1268	06/05/2012	22	1132.8	1488	1666.6	5.0	0.0030
1206224-11	1274	06/06/2012	17	1141.3	1356	1530.1	4.2	0.0027
1206301-02	1271	06/07/2012	22	1132.8	1446	1619.5	8.3	0.0051
1206301-08	1280	06/07/2012	17	1132.8	1446	1619.5	4.0	0.0025
1206301-05	1277	06/08/2012	22	1132.8	384	430.1	5.5	0.013
1206301-11	1286	06/08/2012	17	1132.8	396	443.5	3.4	0.0077
1206447-02	1283	06/11/2012	22	1132.8	1446	1619.5	28	0.018
1206447-05	1292	06/11/2012	17	1132.8	1434	1606.1	4.2	0.0026
1206447-08	1289	06/12/2012	22	1132.8	1428	1599.4	16	0.0099
1206447-11	1298	06/12/2012	17	1132.8	1428	1599.4	3.7	0.0023
1206447-14	1295	06/13/2012	22	1132.8	1440	1612.8	25	0.016
1206447-17	1304	06/13/2012	17	1132.8	1440	1612.8	5.2	0.0032
1206549-02	1301	06/14/2012	22	1132.8	1464	1639.7	34	0.021
1206549-05	1307	06/15/2012	17	1132.8	348	389.8	8.9	0.023
1206549-08	1310	06/14/2012	22	1132.8	1368	1532.2	6.2	0.0040
1206549-11	1316	06/15/2012	17	1132.8	330	369.6	3.0	0.0081
1206638-02	1322	06/18/2012	17	1132.8	1428	1599.4	2.7	0.0017
1206638-05	1313	06/18/2012	22	1132.8	1428	1599.4	14	0.0086
1206638-08	1328	06/19/2012	17	1132.8	1452	1626.2	2.5	0.0015
1206638-11	1319	06/19/2012	22	1132.8	1422	1592.6	16	0.010
1206638-14	1334	06/20/2012	17	1132.8	1398	1565.8	1.3	0.00083
1206638-17	1325	06/20/2012	22	1132.8	1422	1592.6	20	0.013
1206715-02	1331	06/21/2012	22	1132.8	1434	1606.1	8.1	0.0050
1206715-05	1337	06/22/2012	22	1132.8	402	450.2	2.6	0.0058
1206715-08	1340	06/21/2012	17	1132.8	1440	1612.8	2.4	0.0015
1206715-11	1346	06/22/2012	17	1132.8	420	470.4	1.8	0.0038
1206774-02	1352	06/25/2012	17	1132.8	1434	1606.1	2.8	0.0017
1206774-05	1343	06/25/2012	22	1132.8	1434	1606.1	5.3	0.0033
1206774-08	1358	06/26/2012	17	1132.8	1536	1720.3	2.6	0.0015
1206774-11	1349	06/26/2012	22	1132.8	1512	1693.4	9.8	0.0058

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1206774-14	1364	06/27/2012	17	1132.8	1428	1599.4	3.0	0.0019
1206774-17	1355	06/27/2012	22	1132.8	1428	1599.4	8.6	0.0054
1207043-02	1361	06/28/2012	22	1132.8	906	1014.7	11	0.011
1207043-05	1370	06/28/2012	17	1132.8	1422	1592.6	2.3	0.0014
1207043-08	1367	06/29/2012	22	1132.8	306	342.7	2.1	0.0061
1207043-11	1376	06/29/2012	17	1132.8	300	336.0	3.4	0.10
1207099-02	1382	07/02/2012	17	1132.8	1416	1585.9	97	0.073
1207099-05	1379	07/02/2012	22	1132.8	1410	1579.2	54	0.039
1207261-02	1388	07/09/2012	17	1139.9	1530	1724.3	2.8	0.0016
1207261-05	1391	07/09/2012	22	1132.8	1542	1727.0	5.5	0.0035
1207261-08	1385	07/10/2012	17	1135.6	1398	1569.7	11	0.0072
1207261-11	1394	07/10/2012	22	1132.8	1398	1565.8	11	0.0072
1207381-02	1397	07/11/2012	17	1135.6	1440	1616.8	4.6	0.0028
1207381-05	1403	07/12/2012	17	1135.6	1452	1630.3	3.2	0.0020
1207381-08	1400	07/11/2012	22	1132.8	1398	1565.8	8.8	0.0056
1207381-11	1406	07/12/2012	22	1132.8	1452	1626.2	15	0.0095
1207381-14	1409	07/13/2012	17	1137.0	318	357.5	5.3	0.015
1207381-17	1412	07/13/2012	22	1132.8	330	369.6	4.9	0.013
1207500-02	1415	07/16/2012	17	1138.5	1398	1573.6	3.5	0.0022
1207500-05	1418	07/16/2012	22	1132.8	1374	1538.9	4.6	0.0030
1207500-08	1421	07/17/2012	17	1138.5	1212	1364.2	2.1	0.0015
1207500-11	1424	07/17/2012	22	1132.8	1176	1317.1	2.9	0.0022
1207500-16	1430	07/18/2012	22	1132.8	1356	1518.7	3.8	0.010
1207543-04	1436	07/19/2012	22	1132.8	1440	1612.8	7.1	0.0044
1207543-07	1439	07/19/2012	17	1132.8	342	383.0	16	0.040
1207543-10	1442	07/20/2012	22	1132.8	390	436.8	3.1	0.0071
1207632-02	1445	07/23/2012	17	1132.8	1374	1538.9	66	0.043
1207632-05	1448	07/23/2012	22	991.2	1344	1317.1	11	0.0081
1207632-08	1451	07/24/2012	17	1132.8	1440	1612.8	78	0.048
1207632-11	1454	07/24/2012	22	1132.8	1440	1612.8	9.0	0.0056
1207632-14	1457	07/25/2012	17	1132.8	1428	1599.4	51	0.032
1207632-17	1460	07/25/2012	22	1132.8	1428	1599.4	7.2	0.0045
1207721-02	3218	07/26/2012	CTO5 14	1135.6	1446	1623.6	21	0.013
1207722-04	1466	07/26/2012	22	1132.8	1422	1592.6	4.7	0.0030
1207721-09	3226	07/27/2012	CTO5 14	1135.6	372	417.7	16	0.038
1207722-09	1472	07/27/2012	22	1132.8	438	490.6	2.6	0.0053
1208099-02	3234	07/30/2012	CTO5 14	1135.6	1404	1576.4	64	0.041
1208110-04	1478	07/30/2012	22	1132.8	1416	1585.9	12	0.0073
1208099-09	3242	07/31/2012	CTO5 14	1135.6	1404	1576.4	43	0.028
1208110-09	1484	07/31/2012	22	1132.8	1320	1478.4	14	0.0095
1208099-16	3250	08/01/2012	CTO5 14	1135.6	1434	1610.1	42	0.026
1208110-14	1490	08/01/2012	22	1132.8	1434	1606.1	14	0.0086
1208139-02	3258	08/02/2012	CTO5 14	1135.6	1452	1630.3	34	0.021
1208144-04	1496	08/02/2012	22	1132.8	1434	1606.1	11	0.0070
1208139-09	3266	08/03/2012	CTO5 14	1135.6	396	444.6	14	0.030

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1208144-09	1502	08/03/2012	22	1132.8	426	477.1	3.7	0.0078
1208250-02	3274	08/06/2012	CTO5 14	1135.6	1428	1603.4	33	0.020
1208252-04	1508	08/06/2012	22	1132.8	1440	1612.8	7.6	0.0047
1208252-09	1514	08/07/2012	22	1132.8	1356	1518.7	8.5	0.0056
1208252-14	1520	08/08/2012	22	1132.8	1488	1666.6	12	0.0073
1208313-10	3298	08/09/2012	CTO5 14	1132.8	1434	1606.1	36	0.022
1208317-04	1526	08/09/2012	22	1135.6	1524	1711.1	11	0.0064
1208313-10	3306	08/10/2012	CTO5 14	1135.6	1380	1549.5	27	0.017
1208317-09	1532	08/10/2012	22	1076.2	1386	1474.7	9.5	0.0064
1208400-06	1544	08/14/2012	22	1132.8	1080	1209.6	10	0.0084
1208400-11	1550	08/15/2012	22	1132.8	1428	1599.4	15	0.0091
1208477-04	1556	08/16/2012	22	1132.8	1434	1606.1	8.8	0.0055
1208477-09	1562	08/17/2012	22	1125.7	402	447.4	6.0	0.013
1208565-03	1568	08/20/2012	22	1115.8	1284	1416.5	6.5	0.0046
1208565-08	1574	08/21/2012	22	1132.8	1422	1592.6	5.9	0.0037
1208565-13	1580	08/22/2012	22	1132.8	1434	1606.1	5.4	0.0034
1208608-04	1586	08/23/2012	22	1132.8	1434	1606.1	6.7	0.0042
1208608-09	1592	08/24/2012	22	1134.2	336	376.8	3.3	0.0088
1208710-04	1598	08/27/2012	22	1132.8	1434	1606.1	9.7	0.0060
1208710-09	1604	08/28/2012	22	1132.8	1422	1592.6	12	0.0074
1208710-14	1610	08/29/2012	22	1132.8	1350	1512.0	15	0.010
1209108-04	1616	08/30/2012	22	1132.8	1386	1552.3	10	0.0068
1209108-09	1622	08/31/2012	22	1132.8	156	174.7	6.9	0.039
1209119-04	1628	09/04/2012	22	1132.8	1548	1733.8	6.9	0.0040
1209119-09	1634	09/05/2012	22	1132.8	1410	1579.2	8.0	0.0051
1209170-04	1640	09/06/2012	22	1132.8	1410	1579.2	7.2	0.0046
1209170-09	1646	09/07/2012	22	1132.8	378	423.4	3.4	0.0080

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1209283-04	1652	09/10/2012	CTO5 14 22	1132.8	1422	1592.6	6.0	0.0038
1209283-09	1658	09/11/2012	CTO5 14 22	1132.8	1380	1545.6	12	0.0081
1209283-14	1664	09/12/2012	CTO5 14 22	1132.8	1308	1465.0	11	0.0076
1209341-04	1670	09/13/2012	CTO5 14 22	1132.8	1422	1592.6	7.2	0.0045
1209341-09	1676	09/14/2012	CTO5 14 22	1132.8	402	450.2	4.6	0.010
1209432-04	1682	09/17/2012	CTO5 14 22	1132.8	1404	1572.5	4.6	0.0029
1209432-09	1688	09/18/2012	CTO5 14 22	1132.8	1440	1612.8	3.5	0.0022
1209432-14	1694	09/19/2012	CTO5 14 22	1132.8	1458	1633.0	4.1	0.0025
1210077-04	1700	09/28/2012	CTO5 14 22	1132.8	318	356.2	ND	<0.0028
1210164-04	1706	10/01/2012	CTO5 14 22	1132.8	2742	3071.0	20	0.0065
1210164-09	1712	10/03/2012	CTO5 14 22	1132.8	1404	1572.5	18	0.011
1210206-04	1718	10/04/2012	CTO5 14 22	1132.8	1470	1646.4	5.7	0.0035
1210206-09	1724	10/05/2012	CTO5 14 22	1132.8	300	336.0	3.2	0.0095
1210324-04	1730	10/08/2012	CTO5 14 22	1097.4	1428	1549.4	7.0	0.0045
1210324-09	1736	10/09/2012	CTO5 14 22	1088.9	1398	1505.1	7.0	0.0047
1210324-14	1742	10/10/2012	CTO5 14 22	1175.3	1428	1659.3	9.9	0.0060
1210386-06	1754	10/12/2012	CTO5 14 22	1185.2	336	393.7	5.7	0.014
1210457-04	1760	10/15/2012	CTO5 14 22	1350.9	1446	1931.3	ND	<0.00052
1210457-09	1766	10/16/2012	CTO5 14 22	1159.7	1404	1609.8	6.7	0.0042
1210457-14	1772	10/17/2012	CTO5 14 22	1158.3	1452	1662.8	9.3	0.0056
1210522-04	1778	10/18/2012	CTO5 14 22	1152.6	1434	1634.2	12	0.0075
1210522-09	1784	10/19/2012	CTO5 14 22	1022.4	330	333.6	8.4	0.025

Particulate Matter, Smaller than 10 Microns (PM10s)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limit: 5,000 ug/m³

Sample, Date and Station Information				Sampler Run Information			PM10	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Air Flow (l/min)	Duration of Run (min)	Total Air Volume Monitored (m ³)	Total Mass (mg)	Concentration in Air (mg/m ³)
1210614-04	1790	10/23/2012	22 CTO5 14	1045.0	432	446.3	5.4	0.012
1210614-09	1796	10/24/2012	22 CTO5 14	1370.7	1446	1959.6	6.8	0.0035
1211059-04	1808	10/29/2012	22 CTO5 14	1162.5	1434	1648.2	2.6	0.0016
1211059-09	1814	10/30/2012	22 CTO5 14	1178.1	1464	1705.3	ND	<0.00059
1211059-13	1820	10/31/2012	22 CTO5 14	1207.8	474	566.1	ND	<0.0018
1211110-04	1826	11/01/2012	22 CTO5 14	1244.7	1452	1786.8	ND	<0.00056
1211110-09	1832	11/02/2012	22 CTO5 14	1182.4	360	420.8	1.2	0.00067
1211228-04	1838	11/05/2012	22 CTO5 14	1142.7	1410	1593.0	5.1	0.0032
1211228-09	1844	11/06/2012	22 CTO5 14	1154.0	1440	1643.0	8.4	0.0051
1211228-14	1850	11/07/2012	22 CTO5 14	1176.7	1392	1619.5	11	0.0065
1211284-04	1856	11/08/2012	22 CTO5 14	1172.4	1458	1690.1	1.8	NA
1211284-09	1862	11/09/2012	22 CTO5 14	1169.6	372	430.2	ND	NA
1211356-04	1868	11/12/2012	22 CTO5 14	1171.0	1392	1611.7	2.1	0.0013
1211356-07	1874	11/13/2012	22	1018.1	1434	1443.5	1.7	0.0012

l/min = liters per minute

min = minutes

m³ = cubic meters

mg = milligrams

mg/m³ = milligrams per cubic meter

ug = micrograms

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1010406-09	0033	10/13/2010	17	1133	1428	1599.4	110	0.068	76	0.000048	ND	<0.000016
1010406-12	0036	10/13/2010	18	1133	1434	1606.1	96	0.060	57	0.000036	ND	<0.000016
1010637-03	0051	10/18/2010	17	1133	1386	1552.3	35	0.023	ND	<0.000016	ND	<0.000016
1010637-06	0054	10/18/2010	18	1133	1320	1478.4	38	0.026	ND	<0.000017	ND	<0.000017
1010637-03	0057	10/19/2010	17	1133	1368	1532.2	32	0.021	ND	<0.000016	ND	<0.000016
1010637-12	0060	10/19/2010	18	1133	1488	1666.6	55	0.033	39	0.000023	ND	<0.000015
1010637-15	0063	10/20/2010	17	1133	1542	1727.0	68	0.039	30	0.000017	ND	<0.000014
1010637-18	0066	10/20/2010	18	1133	1542	1727.0	54	0.034	ND	<0.000016	ND	<0.000016
1010692-03	0069	10/21/2010	17	1133	1362	1525.4	30	0.020	ND	<0.000016	ND	<0.000016
1010692-06	0072	10/21/2010	18	1133	1428	1599.4	35	0.022	ND	<0.000016	ND	<0.000016
1011030-06	0075	10/26/2010	17	1133	1362	1525.4	63	0.041	34	0.000022	ND	<0.000016
1011030-03	0078	10/25/2010	18	1133	1452	1626.2	56	0.034	ND	<0.000015	ND	<0.000015
1011112-06	0096	11/01/2010	18	1133	312	349.4	11	0.031	ND	<0.000072	ND	<0.000072
1011170-03	0099	11/02/2010	17	1133	1458	1633.0	96	0.059	63	0.000039	ND	<0.000015
1011170-06	0102	11/02/2010	18	1133	606	678.7	14	0.021	ND	<0.000037	ND	<0.000037
1011170-09	0105	11/03/2010	17	1133	1434	1606.1	83	0.052	52	0.000032	ND	<0.000016
1011170-12	0108	11/03/2010	18	1133	606	678.7	47	0.030	ND	<0.000016	ND	<0.000016
1011258-03	0111	11/04/2010	17	1133	1410	1579.2	65	0.041	39	0.000024	ND	<0.000016
1011258-06	0114	11/04/2010	18	1133	594	665.3	29	0.044	ND	<0.000038	ND	<0.000038
1011258-09	0117	11/05/2010	17	1133	414	463.7	16	0.035	ND	<0.000054	ND	<0.000054
1011258-12	0120	11/05/2010	18	1133	408	457.0	15	0.033	ND	<0.000055	ND	<0.000055
1011258-15	0123	11/08/2010	17	1133	1374	1538.9	45	0.029	ND	<0.000016	ND	<0.000016
1011258-18	0126	11/08/2010	18	1133	1392	1607.8	28	0.017	ND	<0.000016	ND	<0.000016
1011334-03	0129	11/09/2010	17	1133	1380	1545.6	30	0.019	ND	<0.000016	ND	<0.000016
1011334-06	0132	11/09/2010	18	1133	1606	1434.0	18	0.011	ND	<0.000016	ND	<0.000016
1011334-09	0135	11/10/2010	17	1133	1680	1500.0	25	0.015	ND	<0.000015	ND	<0.000015
1011334-12	0138	11/10/2010	18	1133	852	954.2	15	0.016	ND	<0.000026	ND	<0.000026
1011376-03	0141	11/11/2010	17	1133	1416	1585.9	41	0.029	ND	<0.000018	ND	<0.000018
1011376-06	0144	11/11/2010	18	1133	1326	1485.1	25	0.017	ND	<0.000017	ND	<0.000017
1011376-09	0147	11/12/2010	17	1133	348	389.8	15	0.038	ND	<0.000064	ND	<0.000064
1011376-12	0150	11/12/2010	18	1133	330	369.6	8.0	0.022	ND	<0.000068	ND	<0.000068
1011484-03	0153	11/15/2010	17	1133	1434	1586.0	77	0.049	50	0.000031	ND	<0.000016
1011484-06	0156	11/15/2010	18	1133	924	517.4	27	0.052	ND	<0.000048	ND	<0.000048
1011484-09	0159	11/16/2010	17	1133	1428	1599.4	57	0.036	ND	<0.000016	ND	<0.000016
1011484-12	0162	11/16/2010	18	1161	516	585.1	17	0.029	ND	<0.000043	ND	<0.000043
1011484-15	0165	11/17/2010	17	1133	1440	1612.8	45	0.028	ND	<0.000016	ND	<0.000016
1011484-18	0168	11/17/2010	18	1133	1440	1612.8	34	0.021	ND	<0.000016	ND	<0.000016
1011547-03	0171	11/18/2010	17	1133	1428	1599.4	38	0.024	ND	<0.000016	ND	<0.000016
1011547-06	0174	11/18/2010	18	1133	1416	1585.9	32	0.020	ND	<0.000016	ND	<0.000016
1011547-09	0177	11/19/2010	17	1133	384	430.1	17	0.040	ND	<0.000058	ND	<0.000058
1011547-12	0180	11/19/2010	18	1133	378	423.4	4.0	0.0094	ND	<0.000059	ND	<0.000059
1011649-03	0183	11/24/2010	17	1133	426	477.1	6.0	0.013	ND	<0.000052	ND	<0.000052
1011649-06	0186	11/24/2010	18	1133	684	766.1	1.0	0.0013	ND	<0.000033	ND	<0.000033
1012048-03	0189	11/29/2010	17	1132.80	1,434	1606.1	39	0.024	27	0.000017	ND	<0.000016
1012048-06	0192	11/29/2010	18	1132.80	1,134	1270.1	10	0.0079	ND	<0.000020	ND	<0.000020
1012048-09	0195	11/30/2010	17	1132.80	1,440	1612.8	55	0.034	28	0.000018	ND	<0.000016
1012048-12	0198	11/30/2010	18	1132.80	1,440	1612.8	29	0.018	ND	<0.000016	ND	<0.000016
1012048-15	0201	12/01/2010	17	1132.80	1,410	1579.2	46	0.029	ND	<0.000016	ND	<0.000016
1012048-18	0204	12/01/2010	18	1132.80	1,374	1538.9	26	0.017	ND	<0.000016	ND	<0.000016
1012173-03	0207	12/02/2010	17	1132.80	1410	1579.2	37	0.023	ND	<0.000016	ND	<0.000016
1012173-06	0210	12/02/2010	18	1132.80	1338	1498.6	26	0.017	ND	<0.000017	ND	<0.000017
1012173-09	0213	12/06/2010	17	1132.80	1452	1626.2	40	0.025	ND	<0.000015	ND	<0.000015
1012173-12	0216	12/06/2010	18	1132.80	1284	1436.3	23	0.020	ND	<0.000022	ND	<0.000022

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1012233-03	0219	12/07/2010	17	1161.12	1434	1626.2	39	0.024	ND	<0.000015	ND	<0.000015
1012233-06	0222	12/07/2010	18	1132.80	1398	1565.8	23	0.015	ND	<0.000016	ND	<0.000016
1012325-03	0225	12/13/2010	17	1132.80	1,458	1633.0	47	0.029	ND	<0.000015	ND	<0.000015
1012325-06	0228	12/13/2010	18	1132.80	1,452	1626.2	66	0.041	43	0.000026	ND	<0.000015
1012394-03	0231	12/14/2010	17	1132.80	1,404	1572.5	10	0.0064	ND	<0.000016	ND	<0.000016
1012394-06	0234	12/14/2010	18	1132.80	1,404	1572.5	27	0.017	ND	<0.000016	ND	<0.000016
1012394-09	0237	12/15/2010	17	1132.80	1,446	1619.5	39	0.024	ND	<0.000015	ND	<0.000015
1012394-12	0240	12/15/2010	18	1132.80	1,446	1619.5	27	0.017	ND	<0.000015	ND	<0.000015
1012451-03	0243	12/16/2010	17	1132.80	1,446	1619.5	38	0.023	ND	<0.000015	ND	<0.000015
1012451-06	0246	12/16/2010	18	1132.80	1440	1612.8	15	0.0093	ND	<0.000016	ND	<0.000016
1101090-03	0249	01/03/2011	17	1132.80	1416	1585.9	46	0.029	30	0.000019	ND	<0.000016
1101090-06	0252	01/03/2011	18	1132.80	1422	1592.6	30	0.019	34	0.000021	ND	<0.000016
1101090-09	0255	01/04/2011	17	1132.80	1452	1626.2	33	0.020	ND	<0.000015	ND	<0.000015
1101090-12	0258	01/04/2011	18	1132.80	1416	1585.9	22	0.014	31	0.000020	ND	<0.000016
1101090-15	0261	01/05/2011	17	1132.80	1410	1579.2	27	0.017	ND	<0.000016	ND	<0.000016
1101090-18	0264	01/05/2011	20	1132.80	1386	1552.3	14	0.0090	ND	<0.000016	ND	<0.000016
1101152-03	0267	01/06/2011	17	1132.80	1434	1606.1	41	0.026	ND	<0.000016	ND	<0.000016
1101152-06	0270	01/06/2011	20	1132.80	1428	1599.4	41	0.026	ND	<0.000016	ND	<0.000016
1101152-09	0273	01/07/2011	17	1132.80	516	577.9	12	0.021	ND	<0.000043	ND	<0.000043
1101152-12	0276	01/07/2011	20	1132.80	504	564.5	7.0	0.012	ND	<0.000044	ND	<0.000044
1101221-02	0279	01/10/2011	17	1132.80	1434	1606.1	34	0.021	ND	<0.000016	ND	<0.000016
1101221-05	0282	01/10/2011	20	1132.80	1434	1606.1	29	0.018	ND	<0.000016	ND	<0.000016
1101221-08	0285	01/11/2011	17	1132.80	1446	1619.5	32	0.020	ND	<0.000015	ND	<0.000015
1101221-11	0288	01/11/2011	20	1132.80	1410	1579.2	29	0.018	ND	<0.000016	ND	<0.000016
1101221-14	0291	01/12/2011	17	1132.80	1452	1626.2	58	0.036	36	0.000022	ND	<0.000015
1101221-17	0294	01/12/2011	20	1132.80	1446	1619.5	23	0.014	ND	<0.000015	ND	<0.000015
1101323-03	0297	01/13/2011	17	1132.80	1446	1619.5	13	0.0080	ND	<0.000015	ND	<0.000015
1101323-06	0300	01/13/2011	20	1132.80	1446	1619.5	12	0.0074	ND	<0.000015	ND	<0.000015
1101323-09	0303	01/14/2011	17	1161.12	420	476.3	3.0	0.0063	ND	<0.000052	ND	<0.000052
1101323-12	0306	01/14/2011	20	1132.80	400.2	448.2	2.0	0.0045	ND	<0.000056	ND	<0.000056
1101323-15	0309	01/17/2011	17	1203.60	1458	1684.0	29	0.017	ND	<0.000015	ND	<0.000015
1101323-18	0312	01/17/2011	20	1132.80	1494	1652.4	30	0.018	ND	<0.000015	ND	<0.000015
1101429-03	0315	01/18/2011	17	1132.80	1422	1592.6	55	0.035	26	0.000016	ND	<0.000016
1101429-06	0318	01/18/2011	20	1132.80	1416	1585.9	37	0.023	ND	<0.000016	ND	<0.000016
1101429-09	0321	01/19/2011	17	1132.80	1440	1612.8	45	0.028	ND	<0.000016	ND	<0.000016
1101429-12	0324	01/19/2011	20	1104.48	1446	1579.0	32	0.020	ND	<0.000016	ND	<0.000016
1101447-03	0327	01/20/2011	17	1132.80	1380	1593.9	51	0.032	34	0.000021	ND	<0.000016
1101447-06	0330	01/20/2011	20	1132.80	1374	1538.9	37	0.024	ND	<0.000016	ND	<0.000016
1101447-09	0333	01/21/2011	17	1203.60	456	526.7	19	0.036	ND	<0.000047	ND	<0.000047
1101447-12	0336	01/21/2011	20	1203.60	408	485.5	11	0.023	ND	<0.000051	ND	<0.000051
1101561-03	0339	01/25/2011	17	1132.80	1434	1606.1	67	0.042	35	0.000022	33	0.000020
1101561-06	0342	01/25/2011	20	1132.80	1434	1586.0	51	0.032	ND	<0.000016	32	0.000020
1101561-09	0345	01/26/2011	17	1132.80	1434	1606.1	72	0.045	42	0.000026	ND	<0.000016
1101561-12	0348	01/26/2011	20	1132.80	1440	1592.6	48	0.030	ND	<0.000016	ND	<0.000016
1102066-03	0351	01/27/2011	17	1138.46	1416	1593.8	57	0.036	29	0.000018	ND	<0.000016
1102066-06	0354	01/27/2011	20	1161.12	1410	1598.9	37	0.023	ND	<0.000016	ND	<0.000016
1102066-09	0357	01/28/2011	17	1132.80	420	470.4	13	0.028	ND	<0.000053	ND	<0.000053
1102066-12	0360	01/28/2011	20	1161.12	396	449.1	24	0.053	ND	<0.000056	ND	<0.000056
1102164-03	0363	01/31/2011	17	1132.8	1806	2022.7	34	0.017	ND	<0.000012	ND	<0.000012
1102164-06	0366	01/31/2011	20	1161.1	1446	1680.3	29	0.017	ND	<0.000015	ND	<0.000015
1102164-09	0369	02/01/2011	17	1132.8	1050	1176.0	55	0.047	31	0.000026	ND	<0.000021
1102164-12	0372	02/01/2011	20	1132.8	1410	1579.2	51	0.032	25	0.000016	ND	<0.000016
1102164-15	0375	02/02/2011	17	1132.8	1440	1612.8	73	0.045	48	0.000030	ND	<0.000016

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1102164-18	0378	02/02/2011	20	1161.1	1446	1639.8	27	0.016	ND	<0.000015	ND	<0.000015
1102164-21	0381	02/03/2011	17	1132.8	1422	1592.6	50	0.031	27	0.000017	ND	<0.000016
1102164-24	0384	02/03/2011	20	1132.8	1434	1606.1	29	0.018	ND	<0.000016	ND	<0.000016
1102271-06	0390	02/04/2011	20	1132.8	378	423.4	12	0.028	ND	<0.000059	ND	<0.000059
1102271-09	0393	02/07/2011	17	1137.0	1446	1625.6	120	0.072	69	0.000043	ND	<0.000015
1102271-12	0396	02/07/2011	20	1147.0	1446	1629.6	89	0.055	45	0.000027	ND	<0.000015
1102271-15	0399	02/08/2011	17	1189.4	1380	1584.2	47	0.030	44	0.000028	ND	<0.000016
1102271-18	0402	02/08/2011	20	1161.1	1374	1558.1	25	0.016	ND	<0.000016	ND	<0.000016
1102465-03	0405	02/09/2011	17	1132.8	1434	1586.0	44	0.028	28	0.000018	ND	<0.000016
1102465-06	0408	02/09/2011	20	1132.8	1434	1606.1	24	0.015	ND	<0.000016	ND	<0.000016
1102465-09	0411	02/10/2011	17	1132.8	1404	1552.8	51	0.033	31	0.000020	ND	<0.000016
1102465-12	0414	02/10/2011	20	1132.8	1404	1572.5	36	0.023	ND	<0.000016	ND	<0.000016
1102465-15	0417	02/11/2011	17	1132.8	426	468.2	29	0.062	ND	<0.000053	ND	<0.000053
1102465-18	0420	02/11/2011	20	1132.8	402	444.6	13	0.029	ND	<0.000056	ND	<0.000056
1102668-03	0423	02/21/2011	17	1132.8	1368	1532.2	46	0.030	ND	<0.000016	ND	<0.000016
1102668-06	0426	02/21/2011	20	1132.8	1326	1485.1	21	0.014	ND	<0.000017	ND	<0.000017
1102668-09	0429	02/22/2011	17	1132.8	1506	1686.7	49	0.029	ND	<0.000015	ND	<0.000015
1102668-12	0432	02/22/2011	20	1132.8	1512	1693.4	38	0.022	ND	<0.000015	ND	<0.000015
1102668-15	0435	02/23/2011	17	1132.8	1344	1505.3	44	0.029	ND	<0.000017	ND	<0.000017
1102668-18	0438	02/23/2011	20	1132.8	1350	1512.0	25	0.017	ND	<0.000017	ND	<0.000017
1103069-03	0441	02/28/2011	17	1132.8	1434	1606.1	47	0.029	ND	<0.000016	ND	<0.000016
1103069-06	0444	02/28/2011	20	1132.8	1410	1579.2	22	0.014	ND	<0.000016	ND	<0.000016
1103069-09	0447	03/01/2011	17	1161.1	1452	1646.6	38	0.023	ND	<0.000015	ND	<0.000015
1103069-12	0450	03/01/2011	20	1132.8	1470	1625.8	31	0.019	ND	<0.000015	ND	<0.000015
1103188-03	0453	03/03/2011	17	1132.8	1446	1619.5	37	0.023	ND	<0.000015	ND	<0.000015
1103188-06	0456	03/03/2011	20	1132.8	1482	1655.7	20	0.012	ND	<0.000015	ND	<0.000015
1103188-09	0459	03/04/2011	17	1132.8	396	443.5	13	0.029	ND	<0.000056	ND	<0.000056
1103188-11	0462	03/04/2011	20	1132.8	396	443.5	10	0.023	ND	<0.000056	ND	<0.000056
1103545-03	0465	03/07/2011	17	1132.8	1476	1653.1	21	0.013	ND	<0.000015	ND	<0.000015
1103545-06	0468	03/07/2011	20	1132.8	1374	1538.9	26	0.017	ND	<0.000016	ND	<0.000016
1103545-09	0471	03/08/2011	17	1132.8	1344	1505.3	35	0.023	ND	<0.000017	ND	<0.000017
1103545-12	0474	03/08/2011	20	1132.8	1278	1422.4	26	0.018	ND	<0.000018	ND	<0.000018
1103545-15	0477	03/09/2011	17	1132.8	1434	1606.1	43	0.027	ND	<0.000016	ND	<0.000016
1103545-18	0480	03/09/2011	20	1132.8	1434	1606.1	26	0.016	ND	<0.000016	ND	<0.000016
1103545-21	0483	03/10/2011	17	1189.4	1410	1658.2	36	0.022	ND	<0.000015	ND	<0.000015
1103545-24	0486	03/10/2011	20	1132.8	1458	1633.0	28	0.017	ND	<0.000015	ND	<0.000015
1103545-27	0489	03/11/2011	17	1132.8	420	470.4	16	0.032	ND	<0.000051	ND	<0.000051
1103545-30	0492	03/11/2011	20	1132.8	378	423.4	21	0.050	ND	<0.000059	ND	<0.000059
1103545-33	0495	03/17/2011	17	1132.8	1398	1546.2	62	0.040	ND	<0.000016	ND	<0.000016
1103545-36	0498	03/17/2011	20	1132.8	1398	1565.8	43	0.027	ND	<0.000016	ND	<0.000016
1103791-03	0501	03/28/2011	17	1132.8	1476	1653.1	54	0.033	ND	<0.015	ND	<0.015
1103791-06	0504	03/28/2011	20	1132.8	1476	1653.1	35	0.021	ND	<0.015	ND	<0.015
1103791-09	0507	03/29/2011	17	1132.8	1452	1626.2	59	0.037	29	0.018	ND	<0.015
1103791-12	0510	03/29/2011	20	1132.8	1440	1612.8	62	0.038	43	0.027	35	0.022
1104064-03	0513	03/30/2011	17	1132.8	1428	1579.4	72	0.045	48	0.000031	ND	<0.000016
1104064-06	0516	03/30/2011	20	1132.8	1434	1565.9	38	0.024	28	0.000018	ND	<0.000016
1104064-09	0519	03/31/2011	17	1132.8	1410	1579.2	65	0.041	42	0.000027	ND	<0.000016
1104064-12	0522	03/31/2011	20	1132.8	1374	1538.9	60	0.039	38	0.000025	ND	<0.000016
1104064-15	0525	04/01/2011	17	1132.8	408	451.2	20	0.044	ND	<0.000055	5.5	<0.003
1104064-18	0528	04/01/2011	20	1132.8	408	451.2	8.0	0.018	ND	<0.000055	7.5	0.0044
1104167-03	0531	04/04/2011	17	1132.8	1404	1572.5	92	0.059	55	0.035	ND	<0.016
1104167-06	0534	04/04/2011	20	1132.8	408	451.2	57	0.034	28	0.017	ND	<0.015
1104167-09	0537	04/05/2011	17	1132.8	1452	1626.2	95	0.059	34	0.021	ND	<0.015

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1104167-12	0540	04/05/2011	20	1132.8	1416	1585.9	84	0.053	36	0.023	ND	<0.016
1104167-15	0543	04/06/2011	17	1132.8	1422	1592.6	120	0.074	68	0.043	ND	<0.016
1104167-18	0546	04/06/2011	20	1132.8	984	1102.1	140	0.12	120	0.11	64	0.058
1104340-03	0549	04/08/2011	17	1161.1	444	503.5	6.9	0.014	ND	<0.050	ND	<0.050
1104340-06	0552	04/08/2011	20	1132.8	402	450.2	2.1	0.0047	ND	<0.056	ND	<0.056
1104340-09	0555	04/11/2011	17	1132.8	1428	1619.4	66	0.040	35	0.022	ND	<0.015
1104340-12	0558	04/11/2011	20	1132.8	1422	1612.5	44	0.027	ND	<0.016	ND	<0.016
1104340-15	0561	04/12/2011	17	1132.8	1392	1559.0	69	0.045	37	0.024	ND	<0.016
1104340-18	0564	04/12/2011	20	1132.8	1434	1606.1	110	0.067	110	0.066	40	0.024
1104472-03	0567	04/13/2011	14	1132.8	1434	1606.1	30	0.019	ND	<0.016	ND	<0.016
1104472-06	0570	04/13/2011	20	1161.1	1494	1694.2	32	0.021	ND	<0.016	ND	<0.016
1104472-09	0573	04/14/2011	14	1132.8	1434	1606.1	40	0.025	ND	<0.016	ND	<0.016
1104472-12	0576	04/14/2011	20	1132.8	1500	1680.0	34	0.020	ND	<0.015	ND	<0.015
1104472-15	0579	04/15/2011	14	1132.8	1392	1559.0	35	0.022	ND	<0.016	ND	<0.016
1104472-18	0582	04/15/2011	20	1132.8	1326	1485.1	18	0.012	ND	<0.017	ND	<0.017
1104472-21	0585	04/16/2011	14	1132.8	348	389.8	4.5	0.012	ND	<0.064	ND	<0.064
1104472-24	0588	04/16/2011	20	1132.8	408	457.0	ND	<0.0022	ND	<0.055	ND	<0.055
1104472-27	0591	04/18/2011	14	1132.8	1416	1585.9	14	0.0090	ND	<0.016	ND	<0.016
1104472-30	0594	04/18/2011	20	1132.8	1434	1606.1	4.0	0.0025	ND	<0.016	ND	<0.016
1104642-03	0597	04/19/2011	14	1132.8	1476	1653.1	35	0.021	ND	<0.015	ND	<0.015
1104642-06	0600	04/19/2011	20	1132.8	1458	1633.0	11	0.0068	ND	<0.015	ND	<0.015
1104642-09	0603	04/20/2011	14	1132.8	1380	1545.6	12	0.0080	ND	<0.016	ND	<0.016
1104642-12	0606	04/20/2011	20	1132.8	1416	1585.9	9.0	0.0057	ND	<0.016	ND	<0.016
1104642-15	0609	04/21/2011	14	1132.8	396	454.6	6.7	0.015	ND	<0.055	ND	<0.055
1104713-03	0615	04/26/2011	14	1132.8	1416	1585.9	66	0.042	26	0.016	ND	<0.016
1104713-06	0618	04/26/2011	20	1161.1	1422	1612.5	48	0.030	ND	<0.016	ND	<0.016
1104713-09	0621	04/27/2011	14	1132.8	1422	1592.6	68	0.043	31	0.019	ND	<0.016
1104713-12	0624	04/27/2011	20	1132.8	1074	1202.9	29	0.024	ND	<0.021	ND	<0.021
1105059-03	0627	04/28/2011	14	1132.8	1380	1545.6	98	0.063	57	0.037	ND	<0.016
1105059-06	0630	04/28/2011	20	1132.8	1392	1549.3	70	0.045	49	0.032	ND	<0.016
1105059-09	0633	04/29/2011	14	1132.8	462	517.4	18	0.035	ND	<0.048	ND	<0.048
1105059-12	0636	04/29/2011	20	1132.8	384	430.1	9.1	0.021	ND	<0.058	ND	<0.058
1105193-03	0639	05/02/2011	14	1132.8	1380	1545.6	67	0.043	31	0.020	ND	<0.016
1105193-06	0642	05/02/2011	20	1132.8	1320	1478.4	59	0.040	38	0.026	ND	<0.017
1105193-09	0645	05/03/2011	14	1132.8	1380	1545.6	75	0.048	28	0.018	ND	<0.016
1105193-12	0648	05/03/2011	20	1104.5	1476	1611.8	97	0.060	72	0.045	32	0.020
1105193-15	0651	05/04/2011	14	1132.8	1428	1599.4	74	0.046	34	0.021	ND	<0.016
1105193-18	0654	05/04/2011	20	1132.8	1446	1619.5	64	0.040	35	0.022	ND	<0.015
1105193-21	0657	05/05/2011	14	1118.6	1470	1625.8	110	0.067	39	0.024	ND	<0.015
1105193-24	0660	05/05/2011	20	1132.8	1194	1337.3	110	0.079	70	0.053	38	0.028
1109373-03	0663	09/12/2011	17	1132.8	1422	1592.6	100	0.064	62	0.039	ND	<0.016
1109373-06	0666	09/12/2011	22	1132.8	1134	1270.1	56	0.044	36	0.029	ND	<0.020
1109373-09	0669	09/13/2011	17	1132.8	1380	1545.6	81	0.052	50	0.032	ND	<0.016
1109373-12	0672	09/13/2011	22	1132.8	1374	1538.9	47	0.030	ND	<0.016	ND	<0.016
1109373-15	0675	09/14/2011	17	1175.3	1506	1718.3	96	0.056	51	0.030	ND	<0.015
1109373-18	0678	09/14/2011	22	1132.8	1506	1686.7	41	0.024	ND	<0.015	ND	<0.015
1109536-03	0681	09/15/2011	17	1139.9	1512	1704.0	94	0.060	55	0.035	ND	<0.016
1109536-06	0684	09/15/2011	22	1111.6	1500	1648.5	60	0.039	37	0.023	ND	<0.016
1109536-09	0687	09/16/2011	17	1132.8	420	470.4	48	0.10	36	0.077	ND	<0.053
1109536-12	0690	09/16/2011	22	1132.8	396	438.0	21	0.049	ND	<0.057	ND	<0.057
1109538-03	0693	09/19/2011	17	1132.8	1398	1565.8	100	0.067	64	0.041	ND	<0.016
1109538-06	0696	09/19/2011	22	1132.8	396	438.0	65	0.041	41	0.026	ND	<0.016
1109538-09	0699	09/20/2011	17	1132.8	1398	1565.8	78	0.047	54	0.033	ND	<0.015
1109538-12	0702	09/20/2011	22	1132.8	1416	1585.9	63	0.039	46	0.028	ND	<0.015
1109538-15	0705	09/21/2011	17	1132.8	1398	1565.8	68	0.044	51	0.032	ND	<0.016

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1109538-18	0708	09/21/2011	22	1132.8	1398	1565.8	120	0.077	110	0.071	34	0.022
1109592-03	0711	09/22/2011	17	1132.8	1368	1532.2	40	0.026	30	0.020	ND	<0.016
1109592-06	0714	09/22/2011	22	1132.8	1398	1565.8	39	0.026	35	0.023	ND	<0.016
1109592-09	0717	09/23/2011	17	1132.8	420	464.5	20	0.044	ND	<0.054	ND	<0.054
1109592-12	0720	09/23/2011	22	1132.8	414	457.9	20	0.043	ND	<0.055	ND	<0.055
1109701-03	0723	09/26/2011	17	1161.1	1440	1633.0	69	0.043	66	0.041	ND	<0.016
1109701-06	0726	09/26/2011	22	1132.8	1440	1592.6	42	0.026	33	0.021	ND	<0.016
1109701-09	0729	09/27/2011	17	1132.8	1404	1572.5	62	0.040	45	0.029	ND	<0.016
1109701-12	0732	09/27/2011	22	1132.8	1404	1552.8	50	0.032	32	0.021	ND	<0.016
1109701-15	0735	09/28/2011	17	1132.8	1440	1612.8	71	0.044	52	0.032	ND	<0.016
1109701-18	0738	09/28/2011	22	1132.8	1434	1606.1	58	0.036	35	0.022	ND	<0.016
1110043-03	0741	09/29/2011	17	1132.8	1440	1612.8	70	0.044	49	0.031	ND	<0.016
1110043-06	0744	09/29/2011	22	1132.8	1434	1606.1	62	0.039	56	0.035	ND	<0.016
1110043-09	0747	09/30/2011	17	1132.8	414	463.7	29	0.062	27	0.057	ND	<0.054
1110043-12	0750	09/30/2011	22	1132.8	408	457.0	11	0.024	ND	<0.055	ND	<0.055
1110175-03	0753	10/03/2011	17	1161.1	1440	1633.0	21	0.013	ND	<0.015	ND	<0.015
1110175-06	0756	10/03/2011	22	1132.8	1434	1606.1	14	0.0090	ND	<0.016	ND	<0.016
1110605-03	0759	10/20/2011	17	1132.8	1452	1626.2	52	0.032	26	0.016	ND	<0.015
1110605-06	0762	10/20/2011	22	1132.8	1458	1633.0	46	0.028	ND	<0.015	ND	<0.015
1110605-09	0765	10/21/2011	17	1132.8	396	443.5	21	0.048	ND	<0.056	ND	<0.056
1110605-12	0768	10/21/2011	22	1132.8	390	436.8	6.6	0.015	ND	<0.057	ND	<0.057
1110605-15	0771	10/24/2011	17	1132.8	1410	1579.2	67	0.043	41	0.026	ND	<0.016
1110605-18	0774	10/24/2011	22	1132.8	1410	1579.2	41	0.026	ND	<0.016	ND	<0.016
1110711-03	0777	10/25/2011	17	1132.8	1440	1612.8	34	0.021	ND	<0.016	ND	<0.016
1110711-06	0780	10/25/2011	22	1132.8	1446	1619.5	41	0.025	ND	<0.015	ND	<0.015
1110711-09	0783	10/26/2011	17	1132.8	1428	1599.4	62	0.039	44	0.028	ND	<0.016
1110711-12	0786	10/26/2011	22	1132.8	1428	1599.4	34	0.021	ND	<0.016	ND	<0.016
1111056-03	0789	10/27/2011	17	1132.8	1440	1612.8	68	0.042	59	0.036	ND	<0.016
1111056-06	0792	10/27/2011	22	1132.8	1440	1612.8	60	0.037	41	0.025	ND	<0.016
1111056-09	0795	10/28/2011	17	1132.8	426	477.1	23	0.049	ND	<0.052	ND	<0.052
1111056-12	0798	10/28/2011	22	1132.8	420	470.4	19	0.040	ND	<0.053	ND	<0.053
1111056-15	0801	10/31/2011	17	1132.8	1482	1659.8	59	0.035	27	0.016	ND	<0.015
1111056-18	0804	10/31/2011	22	1132.8	1482	1659.8	84	0.051	54	0.032	ND	<0.015
1111122-03	0807	11/01/2011	17	1132.8	1380	1545.6	95	0.061	74	0.048	ND	<0.016
1111122-06	0810	11/01/2011	22	1132.8	1380	1545.6	69	0.045	56	0.036	ND	<0.016
1111122-09	0813	11/02/2011	17	1132.8	1422	1592.6	57	0.036	44	0.028	ND	<0.016
1111122-12	0816	11/02/2011	22	1132.8	1422	1592.6	46	0.029	31	0.019	ND	<0.016
1111200-03	0819	11/03/2011	17	1138.5	3114	3496.4	80	0.023	37	0.011	ND	<0.0072
1111200-06	0822	11/03/2011	22	1132.8	3096	3467.5	53	0.015	ND	<0.0072	ND	<0.0072
1111290-03	0825	11/07/2011	17	1132.8	1374	1538.9	34	0.022	ND	<0.016	ND	<0.016
1111290-06	0828	11/07/2011	22	1132.8	1374	1538.9	20	0.013	ND	<0.016	ND	<0.016
1111290-09	0831	11/08/2011	17	1132.8	1134	1270.1	32	0.025	ND	<0.020	ND	<0.020
1111290-12	0834	11/08/2011	22	1132.8	1458	1633.0	30	0.019	ND	<0.015	ND	<0.015
1111290-15	0837	11/09/2011	CTO5 10B	1132.8	1350	1512.0	46	0.031	ND	<0.017	ND	<0.017
1111290-18	0840	11/09/2011	22	1132.8	1482	1659.8	53	0.032	ND	<0.015	ND	<0.015
1111349-03	0843	11/10/2011	CTO5 10B	1132.8	1392	1549.3	52	0.033	31	0.020	ND	<0.016
1111349-06	0846	11/10/2011	22	1132.8	1386	1552.3	52	0.033	30	0.019	ND	<0.016
1111349-09	0849	11/11/2011	CTO5 10B	1132.8	450	504.0	7.2	0.014	ND	<0.050	ND	<0.050
1111349-12	0852	11/11/2011	22	1132.8	474	530.9	4.8	0.0090	ND	<0.047	ND	<0.047
1111463-03	0855	11/14/2011	CTO5 10B	1132.8	1422	1592.6	39	0.024	ND	<0.016	ND	<0.016
1111463-06	0858	11/14/2011	22	1132.8	1434	1606.1	40	0.025	ND	<0.016	ND	<0.016
1111463-09	0861	11/15/2011	CTO5 10B	1132.8	1446	1619.5	44	0.027	ND	<0.015	ND	<0.015
1111463-12	0864	11/15/2011	22	1132.8	1446	1619.5	36	0.022	ND	<0.015	ND	<0.015
1111463-15	0867	11/16/2011	CTO5 10B	1132.8	1422	1592.6	38	0.024	ND	<0.016	ND	<0.016
1111463-18	0870	11/16/2011	22	1132.8	1440	1612.8	27	0.016	ND	<0.016	ND	<0.016
1111569-03	0873	11/17/2011	CTO5 10B	1132.8	1386	1552.3	31	0.020	ND	<0.016	ND	<0.016

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1111569-06	0876	11/17/2011	22	1132.8	1380	1545.6	15	0.0098	ND	<0.016	ND	<0.016
1111569-09	0879	11/21/2011	CTO5 10B	1132.8	1428	1599.4	15	0.0095	ND	<0.016	ND	<0.016
1111569-12	0882	11/21/2011	22	1132.8	1398	1565.8	14	0.0087	ND	<0.016	ND	<0.016
1112042-03	0885	11/28/2011	CTO5 10B	1132.8	1434	1606.1	22	0.014	ND	<0.016	ND	<0.016
1112042-06	0888	11/28/2011	22	1132.8	1542	1727.0	28	0.016	ND	<0.014	ND	<0.014
1112042-09	0891	11/29/2011	CTO5 10B	1132.8	1416	1585.9	17	0.011	27	0.017	ND	<0.016
1112042-12	0894	11/29/2011	22	1132.8	1356	1518.7	16	0.010	ND	<0.016	ND	<0.016
1112042-15	0897	11/30/2011	CTO5 10B	1132.8	1362	1525.4	34	0.023	38	0.025	ND	<0.016
1112042-18	0900	11/30/2011	22	1132.8	1428	1599.4	62	0.039	49	0.031	ND	<0.016
1112128-03	0903	12/01/2011	CTO5 10B	1132.8	1434	1606.1	60	0.038	53	0.033	ND	<0.016
1112128-06	0906	12/01/2011	22	1132.8	1344	1505.3	42	0.028	40	0.027	ND	<0.017
1112128-09	0909	12/02/2011	CTO5 10B	1132.8	390	436.8	7.1	0.016	26	0.061	ND	<0.057
1112128-12	0912	12/02/2011	22	1132.8	348	389.8	ND	<0.000026	ND	<0.00064	ND	<0.00064
1112128-15	0915	12/05/2011	CTO5 10B	1132.8	1278	1431.4	58	0.041	42	0.030	ND	<0.017
1112128-18	0918	12/05/2011	22	1132.8	1272	1424.6	41	0.029	26	0.018	ND	<0.018
1112199-03	0921	12/06/2011	17	1132.8	1344	1505.3	68	0.045	43	0.029	ND	<0.017
1112199-06	0924	12/06/2011	22	1132.8	1356	1518.7	48	0.031	ND	<0.016	ND	<0.016
1112199-09	0927	12/07/2011	17	1132.8	1500	1680.0	74	0.044	54	0.032	ND	<0.015
1112199-12	0930	12/07/2011	22	1132.8	1500	1680.0	37	0.022	ND	<0.015	ND	<0.015
1112269-03	0933	12/08/2011	17	1132.8	1452	1626.2	68	0.042	43	0.027	ND	<0.015
1112269-06	0936	12/08/2011	22	1132.8	1452	1626.2	57	0.035	33	0.020	ND	<0.015
1112269-08	0939	12/09/2011	17	1132.8	360	403.2	12	0.030	ND	<0.062	ND	<0.062
1112269-10	0942	12/09/2011	22	1132.8	354	396.5	13	0.034	ND	<0.063	ND	<0.063
1112374-03	0945	12/13/2011	17	1132.8	1452	1626.2	50	0.031	ND	<0.015	ND	<0.015
1112374-06	0948	12/13/2011	22	1132.8	1452	1626.2	33	0.020	ND	<0.015	ND	<0.015
1112374-09	0951	12/14/2011	17	1132.8	1446	1619.5	36	0.022	ND	<0.015	ND	<0.015
1112374-12	0954	12/14/2011	22	1132.8	1440	1612.8	37	0.023	ND	<0.016	ND	<0.016
1112502-03	0957	12/16/2011	17	1132.8	480	537.6	14	0.025	ND	<0.046	ND	<0.046
1112502-06	0960	12/16/2011	22	1189.4	474	544.2	6.7	0.012	ND	<0.046	ND	<0.046
1112502-09	0963	12/19/2011	17	1161.1	1542	1748.6	56	0.032	35	0.020	ND	<0.014
1112502-12	0966	12/19/2011	22	1132.8	1506	1686.7	32	0.019	ND	<0.015	ND	<0.015
1112574-03	0969	12/20/2011	17	1132.8	1296	1451.5	63	0.043	46	0.032	ND	<0.017
1112574-06	0972	12/20/2011	22	1132.8	1326	1485.1	36	0.024	ND	<0.017	ND	<0.017
1112574-09	0975	12/21/2011	17	1132.8	1434	1606.1	79	0.049	74	0.046	ND	<0.016
1112574-12	0978	12/21/2011	22	1132.8	1326	1485.1	28	0.019	ND	<0.017	ND	<0.017
1112574-15	0981	12/22/2011	17	1132.8	1464	1639.7	38	0.023	29	0.017	ND	<0.015
1112574-18	0984	12/22/2011	22	1132.8	1308	1465.0	25	0.017	ND	<0.017	ND	<0.017
1112574-21	0987	12/27/2011	17	1132.8	1428	1599.4	37	0.023	ND	<0.016	ND	<0.016
1112574-24	0990	12/27/2011	22	1132.8	1428	1599.4	23	0.014	ND	<0.016	ND	<0.016
1201077-03	0993	12/28/2011	17	1132.8	1422	1592.6	26	0.016	ND	<0.016	ND	<0.016
1201077-06	0996	12/28/2011	22	1132.8	1422	1592.6	16	0.010	ND	<0.016	ND	<0.016
1201077-10	1002	12/29/2011	22	1132.8	420	470.4	5.5	0.012	ND	<0.053	ND	<0.053
1201077-13	1005	01/03/2012	17	1132.8	1452	1626.2	46	0.028	30	0.018	ND	<0.015
1201077-16	1008	01/03/2012	22	1147.0	1458	1643.2	35	0.021	ND	<0.015	ND	<0.015
1201077-19	1011	01/04/2012	17	1132.8	1434	1586.0	50	0.031	34	0.021	ND	<0.016
1201077-22	1014	01/04/2012	22	1147.0	1428	1609.4	37	0.023	ND	<0.016	ND	<0.016
1201130-03	1017	01/05/2012	17	1132.8	558	625.0	34	0.055	ND	<0.040	ND	<0.040
1201130-06	1020	01/05/2012	22	1132.8	1500	1680.0	57	0.034	ND	<0.015	ND	<0.015
1201204-03	1023	01/09/2012	17	1132.8	1440	1612.8	87	0.054	58	0.036	ND	<0.016
1201204-06	1026	01/09/2012	22	1132.8	1446	1619.5	62	0.038	32	0.020	ND	<0.015
1201204-09	1029	01/10/2012	17	1132.8	1482	1659.8	32	0.019	ND	<0.015	ND	<0.015
1201204-12	1032	01/10/2012	22	1132.8	1476	1653.1	65	0.039	33	0.020	ND	<0.015
1201204-15	1035	01/11/2012	17	1132.8	1392	1559.0	48	0.031	33	0.021	ND	<0.016
1201204-18	1038	01/11/2012	22	1132.8	1398	1565.8	46	0.030	32	0.021	ND	<0.016
1201249-03	1041	01/12/2012	17	1132.8	1428	1599.4	38	0.024	26	0.017	ND	<0.016
1201249-06	1044	01/12/2012	22	1132.8	1428	1599.4	66	0.041	57	0.035	ND	<0.016

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1201249-09	1047	01/13/2012	17	1246.1	468	563.5	16	0.029	27	0.047	ND	<0.044
1201249-12	1050	01/13/2012	22	1246.1	444	540.8	24	0.045	38	0.070	ND	<0.046
1201342-03	1053	01/16/2012	17	1132.8	1452	1626.2	32	0.020	27	0.017	ND	<0.015
1201342-06	1056	01/16/2012	22	1132.8	1452	1626.2	30	0.018	ND	<0.015	ND	<0.015
1201342-09	1059	01/17/2012	17	1132.8	1356	1518.7	29	0.019	31	0.020	ND	<0.016
1201342-12	1062	01/17/2012	22	1132.8	1356	1518.7	20	0.013	ND	<0.016	ND	<0.016
1201342-15	1065	01/18/2012	17	1132.8	1584	1774.1	29	0.017	26	0.015	ND	<0.014
1201342-18	1068	01/18/2012	22	1132.8	1584	1763.0	25	0.014	ND	<0.014	ND	<0.014
1201497-03	1071	01/19/2012	17	1132.8	1344	1505.3	19	0.013	ND	<0.017	ND	<0.017
1201497-06	1074	01/19/2012	22	1132.8	1314	1462.5	22	0.015	ND	<0.017	ND	<0.017
1201497-09	1077	01/24/2012	17	1132.8	420	470.4	23	0.051	ND	<0.055	ND	<0.055
1201497-12	1080	01/24/2012	22	1132.8	414	463.7	7.2	0.016	ND	<0.054	ND	<0.054
1201581-03	1089	01/26/2012	17	1132.8	1368	1532.2	56	0.037	42	0.027	ND	<0.016
1201581-06	1092	01/26/2012	22	1132.8	1368	1532.2	12	0.0082	ND	<0.016	ND	<0.016
1201581-09	1095	01/27/2012	17	1132.8	426	477.1	5.8	0.012	ND	<0.052	ND	<0.052
1201581-12	1098	01/27/2012	22	1132.8	456	510.7	1.0	0.0020	ND	<0.049	ND	<0.049
1201581-15	1101	01/28/2012	17	1132.8	420	464.5	4.7	0.010	ND	<0.054	ND	<0.054
1201581-18	1104	01/28/2012	22	1132.8	390	436.8	4.3	0.0098	ND	<0.057	ND	<0.057
1202082-03	1107	01/30/2012	17	1132.8	1446	1619.5	51	0.031	48	0.030	ND	<0.015
1202082-06	1110	01/30/2012	22	1132.8	1446	1619.5	20	0.012	ND	<0.015	ND	<0.015
1202082-09	1113	01/31/2012	17	1132.8	1374	1538.9	32	0.020	33	0.022	ND	<0.016
1202082-12	1116	01/31/2012	22	1132.8	1374	1538.9	13	0.0083	ND	<0.016	ND	<0.016
1202124-03	1119	02/02/2012	17	1161.1	1422	1612.5	34	0.021	31	0.019	ND	<0.016
1202124-06	1122	02/02/2012	22	1132.8	1422	1592.6	26	0.017	25	0.016	ND	<0.016
1202124-09	1125	02/03/2012	17	1147.0	432	486.9	12	0.025	25	0.052	ND	<0.051
1202124-12	1128	02/03/2012	22	1132.8	408	451.2	12	0.025	25	0.055	ND	<0.055
1202220-03	1131	02/08/2012	17	1189.4	1428	1639.3	32	0.020	ND	<0.016	ND	<0.016
1202220-06	1134	02/08/2012	22	1132.8	1428	1599.4	30	0.019	30	0.018	ND	<0.015
1202279-03	1137	02/09/2012	17	1124.3	1416	1580.0	46	0.029	ND	<0.016	ND	<0.016
1202279-06	1140	02/09/2012	22	1132.8	1416	1566.1	37	0.023	ND	<0.016	ND	<0.016
1202279-09	1143	02/10/2012	17	1132.8	402	450.2	8.7	0.019	ND	<0.056	ND	<0.056
1202279-12	1146	02/10/2012	22	1132.8	378	423.4	5.4	0.013	ND	<0.059	ND	<0.059
1202389-03	1149	02/15/2012	17	1132.8	1482	1659.8	31	0.018	36	0.022	ND	<0.015
1202389-06	1152	02/15/2012	22	1147.0	1488	1677.0	22	0.013	28	0.017	ND	<0.015
1202450-03	1155	02/16/2012	17	1132.8	1476	1653.1	47	0.029	38	0.023	ND	<0.015
1202450-06	1158	02/16/2012	22	1132.8	1446	1619.5	31	0.019	28	0.017	ND	<0.015
1202631-03	1161	02/23/2012	17	1132.8	1362	1525.4	83	0.055	72	0.048	ND	<0.016
1202631-06	1164	02/23/2012	22	1132.8	1410	1539.7	46	0.030	37	0.024	ND	<0.016
1202631-08	1167	02/24/2012	17	1132.8	372	416.6	24	0.058	38	0.092	ND	<0.060
1202631-10	1170	02/24/2012	22	1132.8	366	409.9	7.1	0.017	ND	<0.061	ND	<0.061
1203209-02	1173	03/06/2012	17	1161.1	1476	1673.8	110	0.067	77	0.046	ND	<0.015
1203209-04	1176	03/06/2012	22	1161.1	1470	1667.0	48	0.029	26	0.016	ND	<0.015
1203404-03	1179	03/12/2012	17	1132.8	1422	1592.6	64	0.040	36	0.023	ND	<0.016
1203404-06	1182	03/12/2012	22	1161.1	1422	1612.5	34	0.021	ND	<0.016	ND	<0.016
1203554-03	1185	03/20/2012	17	1132.8	1398	1565.8	44	0.028	30	0.019	ND	<0.016
1203554-06	1188	03/20/2012	22	1132.8	1404	1572.5	26	0.017	ND	<0.016	ND	<0.016
1205678-03	1200	05/21/2012	22	1132.8	1392	1559.0	16	0.010	ND	<0.016	ND	<0.016
1205678-06	1203	05/21/2012	17	934.6	690	637.6	50	0.079	41	0.065	ND	<0.039
1205678-09	1206	05/22/2012	22	1132.8	1386	1552.3	59	0.038	31	0.020	ND	<0.016
1205678-12	1209	05/22/2012	17	934.6	1080	997.9	86	0.086	38	0.038	ND	<0.025
1205678-15	1212	05/23/2012	22	1132.8	1452	1626.2	86	0.053	30	0.018	ND	<0.015
1205678-17	1215	05/23/2012	17	934.6	1452	1341.6	150	0.11	68	0.051	38	0.028
1205678-20	1218	05/24/2012	22	1132.8	1386	1552.3	71	0.046	30	0.020	ND	<0.016
1205678-22	1221	05/24/2012	17	934.6	1392	1286.2	150	0.12	74	0.057	39	0.031
1205741-02	1233	05/25/2012	17	934.6	396	365.9	34	0.093	ND	<0.068	25	0.069
1205741-05	1236	05/25/2012	22	1132.8	384	430.1	12	0.027	ND	<0.058	ND	<0.058

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1206030-03	1230	05/29/2012	22	1132.8	1422	1592.6	53	0.033	ND	<0.016	ND	<0.016
1206030-06	1239	05/29/2012	17	934.6	1422	1313.9	55	0.035	ND	<0.016	ND	<0.016
1206030-08	1236	05/30/2012	22	1132.8	1422	1592.6	94	0.072	46	0.035	ND	<0.019
1206030-10	1245	05/30/2012	17	934.6	1440	1330.6	86	0.065	34	0.026	ND	<0.019
1206118-03	1242	05/31/2012	22	1132.8	1452	1626.2	54	0.034	ND	<0.016	ND	<0.015
1206118-06	1248	06/01/2012	17	1132.8	360	403.2	14	0.035	ND	<0.016	ND	<0.062
1206118-09	1251	05/31/2012	22	934.6	1452	1341.6	99	0.074	46	0.035	ND	<0.019
1206118-12	1257	06/01/2012	17	934.6	378	349.3	28	0.080	34	0.026	ND	<0.072
1206224-03	1260	06/05/2012	22	991.2	1512	1418.3	42	0.030	ND	<0.018	ND	<0.018
1206224-06	1266	06/06/2012	17	991.2	1344	1317.1	39	0.029	ND	<0.019	ND	<0.019
1206224-09	1269	06/05/2012	22	934.6	1494	1317.7	78	0.059	31	0.024	ND	<0.019
1206224-12	1275	06/06/2012	17	877.9	1350	1171.8	80	0.068	30	0.026	ND	<0.021
1206301-03	1272	06/07/2012	22	991.2	1446	1417.1	45	0.032	ND	<0.018	ND	<0.018
1206301-09	1281	06/07/2012	17	877.9	1440	1249.9	130	0.10	69	0.055	ND	<0.020
1206301-06	1278	06/08/2012	22	991.2	384	376.3	19	0.050	ND	<0.066	ND	<0.066
1206301-12	1287	06/08/2012	17	934.6	396	365.9	52	0.14	40	0.11	ND	<0.068
1206447-03	1284	06/11/2012	22	991.2	1446	1417.1	87	0.062	26	0.018	ND	<0.018
1206447-06	1293	06/11/2012	17	934.6	1440	1330.6	120	0.091	50	0.038	ND	<0.019
1206447-09	1290	06/12/2012	22	991.2	1428	1359.5	79	0.058	44	0.032	ND	<0.018
1206447-12	1299	06/12/2012	17	934.6	1428	1259.5	130	0.11	70	0.056	ND	<0.020
1206447-15	1296	06/13/2012	22	934.6	1440	1330.6	68	0.051	ND	<0.019	ND	<0.019
1206447-18	1305	06/13/2012	17	849.6	1440	1209.6	100	0.083	32	0.026	ND	<0.021
1206549-03	1302	06/14/2012	22	934.6	1476	1363.8	84	0.061	ND	<0.018	ND	<0.016
1206549-06	1308	06/15/2012	17	934.6	348	321.6	19	0.060	ND	<0.078	ND	<0.016
1206549-09	1311	06/14/2012	22	849.6	1368	1149.1	120	0.10	36	0.031	ND	<0.019
1206549-12	1317	06/15/2012	17	849.6	342.8	288.0	33	0.12	ND	<0.087	ND	<0.019
1206638-03	1323	06/18/2012	17	849.6	1428	1199.5	81	0.067	34	0.029	ND	<0.021
1206638-06	1314	06/18/2012	22	991.2	1428	1359.5	53	0.039	ND	<0.018	ND	<0.018
1206638-09	1329	06/19/2012	17	849.6	1458	1224.7	94	0.077	34	0.028	ND	<0.020
1206638-12	1320	06/19/2012	22	934.6	1422	1313.9	64	0.049	ND	<0.019	ND	<0.019
1206638-15	1335	06/20/2012	17	849.6	1404	1179.4	85	0.072	31	0.027	ND	<0.021
1206638-18	1326	06/20/2012	22	934.6	1422	1313.9	63	0.048	ND	<0.019	ND	<0.019
1206715-03	1332	06/21/2012	22	934.6	1446	1336.1	25	0.019	ND	<0.019	ND	<0.019
1206715-06	1338	06/22/2012	22	934.6	402	371.4	4.5	0.012	ND	<0.067	ND	<0.067
1206715-09	1341	06/21/2012	17	849.6	1440	1209.6	61	0.050	27	0.022	ND	<0.021
1206715-12	1347	06/22/2012	17	849.6	420	352.8	20	0.056	ND	<0.071	ND	<0.071
1206774-03	1353	06/25/2012	17	849.6	1440	1209.6	58	0.048	36	0.029	ND	<0.021
1206774-06	1344	06/25/2012	22	934.6	1434	1325.0	17	0.013	ND	<0.019	ND	<0.019
1206774-09	1359	06/26/2012	17	849.6	1536	1290.2	68	0.053	31	0.024	ND	<0.019
1206774-12	1350	06/26/2012	22	934.6	1512	1397.1	58	0.041	31	0.022	ND	<0.018
1206774-15	1365	06/27/2012	17	849.6	1428	1199.5	86	0.071	44	0.037	ND	<0.021
1206774-18	1356	06/27/2012	22	934.6	1428	1319.5	36	0.027	ND	<0.019	ND	<0.019
1207043-03	1362	06/28/2012	22	934.6	912	842.7	34	0.040	ND	<0.030	ND	<0.030
1207043-06	1371	06/28/2012	17	849.6	1422	1194.5	87	0.073	46	0.038	ND	<0.021
1207043-09	1368	06/29/2012	22	934.6	300	277.2	6.6	0.024	ND	<0.090	ND	<0.090
1207043-12	1377	06/29/2012	17	849.6	300	252.0	14	0.56	ND	<0.099	ND	<0.099
1207099-03	1383	07/02/2012	17	934.6	1440	1330.6	97	0.073	43	0.000033	ND	<0.000019
1207099-06	1380	07/02/2012	22	991.2	1416	1387.7	54	0.039	ND	<0.000018	ND	<0.000018
1207261-03	1389	07/09/2012	17	1132.8	1548	1625.4	79	0.049	29	0.000018	ND	<0.000015
1207261-06	1392	07/10/2012	17	991.2	1392	1364.2	93	0.068	48	0.000035	ND	<0.000018
1207261-09	1386	07/09/2012	22	1132.8	1548	1603.7	35	0.026	ND	<0.000019	ND	<0.000019
1207261-12	1395	07/10/2012	22	962.9	1386	1319.5	39	0.029	ND	<0.000019	ND	<0.000019
1207381-03	1398	07/11/2012	17	1019.5	1440	1451.5	75	0.052	36	0.000025	39	0.000027
1207381-06	1404	07/12/2012	17	1019.5	1452	1463.6	140	0.095	55	0.000038	30	0.000020
1207381-09	1401	07/11/2012	22	962.9	1410	1342.3	39	0.029	ND	<0.000019	ND	<0.000019
1207381-12	1407	07/12/2012	22	962.9	1446	1396.8	57	0.041	ND	<0.000018	ND	<0.000018

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1207381-15	1410	07/13/2012	17	1019.5	324	322.1	30	0.094	ND	<0.000078	ND	<0.000078
1207381-18	1413	07/13/2012	22	991.2	336	329.3	21	0.064	ND	<0.000076	ND	<0.000076
1207500-03	1416	07/16/2012	17	1019.5	1404	1415.2	52	0.036	26	0.000018	ND	<0.000017
1207500-06	1419	07/16/2012	22	991.2	1410	1381.8	20	0.014	ND	<0.000018	ND	<0.000018
1207500-09	1422	07/17/2012	17	1132.8	1212	1357.4	42	0.031	ND	<0.000018	ND	<0.000018
1207500-12	1425	07/17/2012	22	991.2	1176	1152.5	11	0.0093	ND	<0.000022	ND	<0.000022
1207500-14	1428	07/18/2012	17	1132.8	1476	1549.8	54	0.035	29	0.000019	ND	<0.000016
1207500-17	1431	07/18/2012	22	991.2	1470	1440.6	8.8	0.027	ND	<0.000076	ND	<0.000076
1207543-02	1434	07/19/2012	17	1132.8	1338	1498.6	77	0.051	37	0.000025	46	0.000031
1207543-05	1437	07/19/2012	22	991.2	1332	1305.4	26	0.020	ND	<0.000019	ND	<0.000019
1207543-08	1440	07/20/2012	17	1132.8	372	390.6	23	0.059	ND	<0.000064	ND	<0.000064
1207543-11	1443	07/20/2012	22	991.2	390	382.2	14	0.037	ND	<0.000065	ND	<0.000065
1207632-03	1446	07/23/2012	17	991.2	1368	1340.6	76	0.056	27	0.000020	ND	<0.000019
1207632-06	1449	07/23/2012	22	991.2	1350	1323.0	48	0.036	ND	<0.000019	ND	<0.000019
1207632-09	1452	07/24/2012	17	1132.8	1410	1579.2	120	0.073	69	0.000044	ND	<0.000016
1207632-12	1455	07/24/2012	22	991.2	1440	1411.2	37	0.026	ND	<0.000018	ND	<0.000018
1207632-15	1458	07/25/2012	17	1132.8	1434	1606.1	86	0.054	49	0.000031	ND	<0.000016
1207632-18	1461	07/25/2012	22	991.2	1428	1399.4	24	0.017	ND	<0.000018	ND	<0.000018
1207722-02	1464	07/26/2012	17	991.2	1428	1419.4	70	0.049	36	0.000025	ND	<0.000018
1207722-05	1467	07/26/2012	22	991.2	1422	1393.6	38	0.027	32	0.000023	ND	<0.000018
1207722-07	1470	07/27/2012	17	1132.8	438	490.6	35	0.0071	25	0.000052	ND	<0.000051
1207722-10	1473	07/27/2012	22	991.2	444	435.1	8.1	0.019	ND	<0.000057	ND	<0.000057
1208110-02	1476	07/30/2012	17	1132.8	1416	1546.3	110	0.074	58	0.000037	40	0.000026
1208110-05	1479	07/30/2012	22	1132.8	1416	1486.8	50	0.034	ND	<0.000017	ND	<0.000017
1208110-07	1482	07/31/2012	17	1132.8	1398	1487.5	130	0.085	60	0.000040	29	0.000019
1208110-10	1485	07/31/2012	22	962.9	1320	1256.6	53	0.042	28	0.000022	ND	<0.000020
1208110-12	1488	08/01/2012	17	1132.8	1440	1612.8	100	0.063	57	0.000036	33	0.000020
1208110-15	1491	08/01/2012	22	991.2	1434	1405.3	55	0.039	35	0.000025	ND	<0.000018
1208144-02	1494	08/02/2012	17	1132.8	1440	1612.8	130	0.081	75	0.000046	49	0.000030
1208144-05	1497	08/02/2012	22	991.2	1440	1411.2	42	0.030	ND	<0.000018	ND	<0.000018
1208144-07	1500	08/03/2012	17	1132.8	414	434.7	27	0.063	ND	<0.000058	ND	<0.000058
1208144-10	1503	08/03/2012	22	991.2	420	411.6	19	0.046	ND	<0.000061	ND	<0.000061
1208252-02	1506	08/06/2012	17	1132.8	1422	1592.6	96	0.061	54	0.000034	29	0.000018
1208252-05	1509	08/06/2012	22	991.2	1392	1364.2	38	0.028	30	0.000022	ND	<0.000018
1208252-07	1512	08/07/2012	17	1132.8	1386	1552.3	120	0.078	73	0.000047	34	0.000022
1208252-10	1515	08/07/2012	22	991.2	1410	1381.8	48	0.035	32	0.000023	ND	<0.000018
1208252-12	1518	08/08/2012	17	1132.8	1488	1666.6	110	0.068	55	0.000033	47	0.000028
1208252-15	1521	08/08/2012	22	991.2	1488	1458.2	48	0.033	ND	<0.000017	ND	<0.000017
1208317-02	1524	08/09/2012	17	1132.8	1530	1713.6	130	0.074	67	0.000039	33	0.000019
1208317-05	1527	08/09/2012	22	991.2	1524	1493.5	57	0.038	27	0.000018	ND	<0.000017
1208317-07	1530	08/10/2012	17	1132.8	1314	1471.7	100	0.071	52	0.000036	33	0.000023
1208317-10	1533	08/10/2012	22	1062.0	1272	1371.2	36	0.026	ND	<0.000018	ND	<0.000018
1208400-04	1542	08/14/2012	17	991.2	1080	1058.4	79	0.075	38	0.000036	ND	<0.000024
1208400-07	1545	08/14/2012	22	991.2	1074	1052.5	31	0.029	ND	<0.000024	ND	<0.000024
1208400-09	1548	08/15/2012	17	1132.8	1434	1606.1	92	0.057	41	0.000025	ND	<0.000016
1208400-12	1551	08/15/2012	22	991.2	1434	1385.2	50	0.036	30	0.000022	ND	<0.000018
1208477-02	1554	08/16/2012	17	1132.8	1440	1612.8	100	0.062	55	0.000034	ND	<0.000016
1208477-05	1557	08/16/2012	22	962.9	1434	1304.9	24	0.017	ND	<0.000018	ND	<0.000018
1208477-07	1560	08/17/2012	17	1132.8	420	446.9	29	0.066	ND	<0.000056	ND	<0.000056
1208477-10	1563	08/17/2012	22	991.2	402	374.3	20	0.053	ND	<0.000067	ND	<0.000067
1208565-04	1569	08/20/2012	22	1132.8	1884	1978.2	35	0.018	ND	<0.000013	ND	<0.000013
1208565-06	1572	08/21/2012	17	1132.8	1440	1512.0	82	0.054	35	0.000023	ND	<0.000017
1208565-09	1575	08/21/2012	22	991.2	1422	1333.8	45	0.034	28	0.000021	ND	<0.000019
1208565-11	1578	08/22/2012	17	1019.5	1446	1457.6	59	0.040	ND	<0.000017	ND	<0.000017
1208565-14	1581	08/22/2012	22	906.2	1446	1295.6	29	0.022	ND	<0.000019	ND	<0.000019
1208608-02	1584	08/23/2012	17	1047.8	1440	1471.7	79	0.054	45	0.000031	ND	<0.000017

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1208608-05	1587	08/23/2012	22	906.2	1440	1290.2	29	0.022	ND	<0.000019	ND	<0.000019
1208608-07	1590	08/24/2012	17	1019.5	336	338.7	43	0.13	33	0.000097	ND	<0.000074
1208608-10	1593	08/24/2012	22	1019.5	330	332.6	15	0.046	ND	<0.000075	ND	<0.000075
1208710-02	1596	08/27/2012	17	1104.5	1446	1498.1	97	0.065	49	0.000033	ND	<0.000017
1208710-05	1599	08/27/2012	22	991.2	1434	1304.9	56	0.043	26	0.000020	ND	<0.000019
1208710-07	1602	08/28/2012	17	991.2	1428	1399.4	120	0.087	63	0.000045	26	0.000019
1208710-10	1605	08/28/2012	22	849.6	1434	1204.6	60	0.049	26	0.000022	ND	<0.000021
1208710-12	1608	08/29/2012	17	1019.5	1386	1397.1	110	0.079	55	0.000039	ND	<0.000018
1208710-15	1611	08/29/2012	22	849.6	1338	1123.9	64	0.057	ND	<0.000022	ND	<0.000022
1209108-02	1614	08/30/2012	17	1132.8	1380	1545.6	140	0.094	80	0.000052	32	0.000021
1209108-05	1617	08/30/2012	22	991.2	1392	1364.2	72	0.053	42	0.000031	ND	<0.000018
1209108-07	1620	08/31/2012	17	1132.8	174	194.9	8.5	0.044	ND	<0.00013	ND	<0.00013
1209108-10	1623	08/31/2012	22	991.2	156	152.9	8.5	0.056	ND	<0.00016	ND	<0.00016
1209119-02	1626	09/04/2012	17	991.2	1524	1472.2	32	0.022	ND	<0.000017	ND	<0.000017
1209119-05	1629	09/04/2012	22	1132.8	1554	1501.2	34	0.022	ND	<0.000017	ND	<0.000017
1209119-07	1632	09/05/2012	17	906.2	1440	1330.6	62	0.047	27	0.000020	ND	<0.000019
1209119-10	1635	09/05/2012	22	736.3	1410	1026.5	30	0.029	ND	<0.000024	ND	<0.000024
1209170-02	1638	09/06/2012	17	962.9	1386	1319.5	96	0.073	55	0.000042	ND	<0.000019
1209170-05	1641	09/06/2012	22	736.3	1410	1026.5	41	0.040	ND	<0.000024	ND	<0.000024
1209170-07	1644	09/07/2012	17	906.2	384	338.7	26	0.078	ND	<0.000074	ND	<0.000074
1209170-10	1647	09/07/2012	22	736.3	372	270.8	14	0.052	ND	<0.000092	ND	<0.000092
1209283-02	1650	09/10/2012	17	1132.8	1422	1493.1	74	0.049	31	0.000021	ND	<0.000017
1209283-05	1653	09/10/2012	22	962.9	1422	1274.1	50	0.039	ND	<0.000020	ND	<0.000020
1209283-07	1656	09/11/2012	17	991.2	1392	1364.2	84	0.062	45	0.000033	ND	<0.000018
1209283-10	1659	09/11/2012	22	849.6	1386	1164.2	63	0.054	29	0.000025	ND	<0.000021
1209283-12	1662	09/12/2012	17	991.2	1464	1434.7	65	0.046	42	0.000029	ND	<0.000017
1209283-15	1665	09/12/2012	22	849.6	1428	1199.5	38	0.032	ND	<0.000021	ND	<0.000021
1209341-02	1668	09/13/2012	17	991.2	1404	1375.9	91	0.066	50	0.000036	ND	<0.000018
1209341-05	1671	09/13/2012	22	849.6	1416	1189.4	38	0.032	ND	<0.000021	ND	<0.000021
1209341-07	1674	09/14/2012	17	991.2	420	394.0	35	0.088	ND	<0.000063	ND	<0.000063
1209341-10	1677	09/14/2012	22	849.6	408	319.9	12	0.039	ND	<0.000078	ND	<0.000078
1209432-02	1680	09/17/2012	17	1132.8	1410	1500.2	58	0.039	25	0.000017	ND	<0.000017
1209432-05	1683	09/17/2012	22	991.2	1404	1375.9	22	0.016	ND	<0.000018	ND	<0.000018
1209432-07	1686	09/18/2012	17	1132.8	1446	1619.5	58	0.036	31	0.000019	ND	<0.000015
1209432-10	1689	09/18/2012	22	849.6	1440	1209.6	32	0.027	ND	<0.000021	ND	<0.000021
1209432-12	1692	09/19/2012	17	1132.8	1458	1633.0	77	0.047	34	0.000021	ND	<0.000015
1209432-15	1695	09/19/2012	22	849.6	1464	1229.8	38	0.031	ND	<0.000020	ND	<0.000020
1210077-02	1698	09/28/2012	17	991.2	318	311.6	15	0.048	ND	<0.000080	ND	<0.000080
1210077-05	1701	09/28/2012	22	1132.8	318	356.2	3.4	0.0095	ND	<0.000070	ND	<0.000070
1210164-02	1704	10/01/2012	17	566.4	2736	1532.2	110	0.072	61	0.000040	ND	<0.000016
1210164-05	1707	10/01/2012	22	750.5	2730	2006.6	85	0.042	41	0.000020	ND	<0.000012
1210164-07	1710	10/03/2012	17	849.6	1404	1179.4	95	0.081	53	0.000045	ND	<0.000021
1210164-10	1713	10/03/2012	22	877.9	1404	1199.0	46	0.039	ND	<0.000021	ND	<0.000021
1210206-02	1716	10/04/2012	17	849.6	1506	1265.0	72	0.057	42	0.000033	ND	<0.000020
1210206-05	1719	10/04/2012	22	906.2	1476	1219.2	30	0.025	ND	<0.000021	ND	<0.000021
1210206-07	1722	10/05/2012	17	849.6	282	236.9	16	0.066	ND	<0.00011	ND	<0.00011
1210206-10	1725	10/05/2012	22	736.3	300	214.2	2.3	0.011	ND	<0.00012	ND	<0.00012
1210324-02	1728	10/08/2012	17	991.2	1500	1239.0	38	0.030	ND	<0.000020	ND	<0.000020
1210324-05	1731	10/08/2012	22	962.9	1428	1279.5	22	0.017	ND	<0.000020	ND	<0.000020
1210324-07	1734	10/09/2012	17	849.6	1398	1174.3	42	0.035	ND	<0.000021	ND	<0.000021
1210324-10	1737	10/09/2012	22	1076.2	1398	1330.9	24	0.018	ND	<0.000019	ND	<0.000019
1210324-12	1740	10/10/2012	17	849.6	1410	1164.7	86	0.073	48	0.000042	ND	<0.000021
1210324-15	1743	10/10/2012	22	849.6	1434	1204.6	64	0.053	39	0.000032	ND	<0.000021
1210386-02	1746	10/11/2012	17	877.9	1488	1197.8	32	0.026	ND	<0.000021	ND	<0.000021
1210386-04	1752	10/12/2012	17	906.2	378	312.2	9.8	0.031	ND	<0.000080	ND	<0.000080
1210386-07	1755	10/12/2012	22	906.2	1434	1224.6	3.2	0.0026	ND	<0.000020	ND	<0.000020

Total Suspended Particulates (TSP), Manganese (Mn) and Lead (Pb)

Dates Monitored: 10/6/10 through 11/13/12

Cal-OSHA Permissible Exposure Limits: TSP - 10 mg/m³; Manganese - 200 ug/m³; Lead - 50 ug/m³

Sample, Date and Station Information				Sampler Run Information			Total Suspended Particulates		Manganese		Lead	
Sample ID	Sample Field ID	Sample Date	Monitoring Station	Ave Flow Rate	Duration of Run	Total Air Volume Monitored	Total Mass	Concentration in Air	Total Mass	Concentration in Air	Total Mass	Concentration in Air
				(l/min)	(min)	(m ³)	(mg)	(mg/m ³)	(mass, ug)	(mg/m ³)	(mass, ug)	(mg/m ³)
1210457-02	1758	10/15/2012	17	991.2	1440	1169.3	23	0.020	ND	<0.000021	ND	<0.000021
1210457-05	1761	10/15/2012	22	1019.5	1446	1417.1	19	0.013	ND	<0.000018	ND	<0.000018
1210457-07	1764	10/16/2012	17	991.2	1440	1370.9	70	0.051	34	0.000024	ND	<0.000018
1210457-10	1767	10/16/2012	22	991.2	1410	1322.6	34	0.025	ND	<0.000019	ND	<0.000019
1210457-12	1770	10/17/2012	17	1132.8	1452	1544.9	75	0.049	49	0.000032	ND	<0.000016
1210457-15	1773	10/17/2012	22	1019.5	1452	1362.0	63	0.046	38	0.000028	ND	<0.000018
1210522-02	1776	10/18/2012	17	1104.5	1434	1505.7	78	0.052	50	0.000033	ND	<0.000017
1210522-05	1779	10/18/2012	22	991.2	1434	1325.0	58	0.044	39	0.000029	ND	<0.000019
1210522-07	1782	10/19/2012	17	1076.2	318	329.4	12	0.036	ND	<0.000076	ND	<0.000076
1210522-10	1785	10/19/2012	22	991.2	318	307.2	10	0.034	ND	<0.000081	ND	<0.000081
1210614-02	1788	10/23/2012	17	991.2	426	399.6	6.1	0.015	ND	<0.000063	ND	<0.000063
1210614-05	1791	10/23/2012	22	991.2	318	307.2	1.1	0.0036	ND	<0.000081	ND	<0.000081
1210614-07	1794	10/24/2012	17	849.6	1446	1133.7	14	0.012	ND	<0.000022	ND	<0.000022
1210614-10	1797	10/24/2012	22	991.2	1446	1174.2	7.9	0.0067	ND	<0.000021	ND	<0.000021
1211059-02	1806	10/29/2012	17	906.2	1458	1224.7	68	0.056	56	0.000045	ND	<0.000020
1211059-05	1809	10/29/2012	22	1132.8	1434	1445.5	8.5	0.0059	ND	<0.000017	ND	<0.000017
1211059-07	1812	10/30/2012	17	849.6	1944	1578.5	50	0.031	41	0.000026	ND	<0.000016
1211059-10	1815	10/30/2012	22	991.2	1464	1393.7	2.6	0.0019	ND	<0.000018	ND	<0.000018
1211059-14	1821	10/31/2012	22	991.2	480	450.2	ND	<0.0022	ND	<0.000056	ND	<0.000056
1211110-02	1824	11/01/2012	17	1019.5	1458	1347.2	44	0.033	ND	<0.000019	ND	<0.000019
1211110-05	1827	11/01/2012	22	1189.4	1452	1524.6	18	0.012	ND	<0.000016	ND	<0.000016
1211110-07	1830	11/02/2012	17	849.6	360	302.4	26	0.086	ND	<0.000083	ND	<0.000083
1211110-10	1833	11/02/2012	22	849.6	360	302.4	13	0.0086	ND	<0.000016	ND	<0.000016
1211228-02	1836	11/05/2012	17	962.9	1416	1268.7	110	0.089	93	0.000073	ND	<0.000020
1211228-05	1839	11/05/2012	22	1189.4	1410	1500.2	40	0.027	27	0.000018	ND	<0.000017
1211228-07	1842	11/06/2012	17	962.9	1446	1295.6	90	0.070	62	0.000048	ND	<0.000019
1211228-10	1845	11/06/2012	22	962.9	1434	1365.2	45	0.033	29	0.000021	ND	<0.000018
1211228-12	1848	11/07/2012	17	962.9	1386	1261.3	91	0.072	54	0.000043	ND	<0.000020
1211228-15	1851	11/07/2012	22	991.2	1392	1286.2	73	0.057	57	0.000045	35	0.000027
1211284-02	1854	11/08/2012	17	906.2	1464	1270.8	48	NA	30	NA	ND	NA
1211284-05	1857	11/08/2012	22	906.2	1458	1296.2	21	NA	ND	NA	ND	NA
1211284-07	1860	11/09/2012	17	906.2	372	322.9	13	NA	ND	NA	ND	NA
1211284-10	1863	11/09/2012	22	962.9	378	338.7	2.0	NA	ND	NA	ND	NA
1211356-02	1866	11/12/2012	17	962.9	1404	1258.0	99	0.079	87	0.000069	ND	<0.000020
1211356-05	1869	11/12/2012	22	991.2	1398	1311.3	32	0.024	ND	<0.000019	ND	<0.000019
1211356-08	1875	11/13/2012	22	991.2	1428	1339.5	35	0.026	ND	<0.000019	ND	<0.000019

l/min = liters per minute

min = minutes

m³ = cubic meters

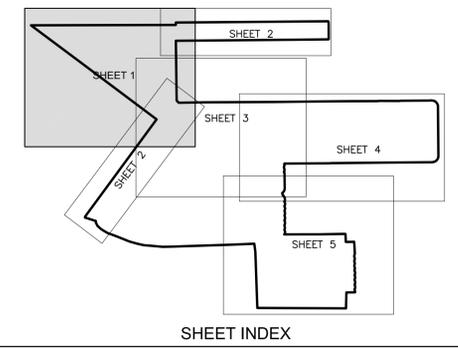
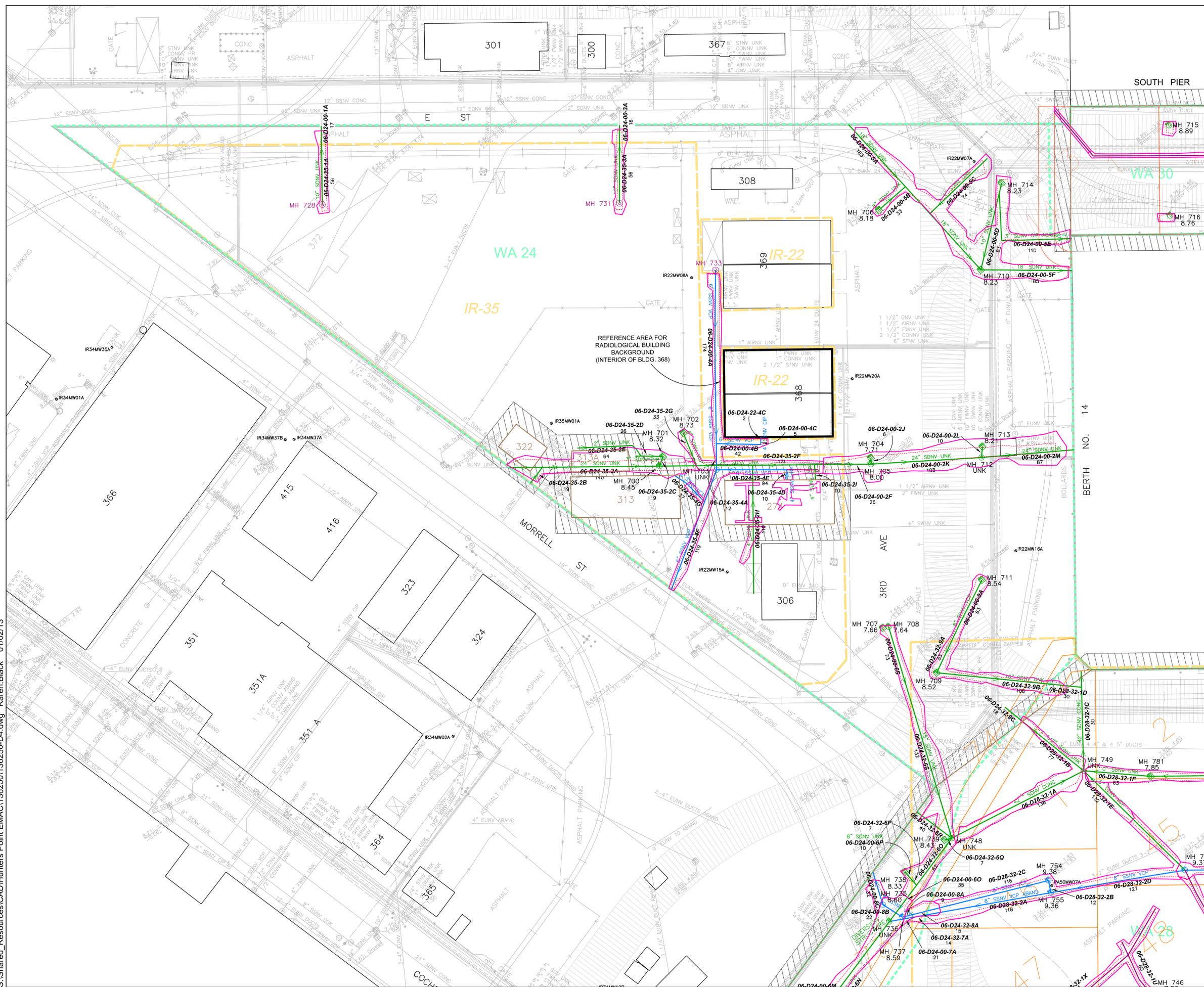
mg = milligrams

mg/m³ = milligrams per cubic meter

ug = micrograms

Appendix C
As-Built Drawings

S:\Shared_Resources\CAD\Hunters Point EMAC\136250\136250-D4.dwg Karen.Black 01/02/13



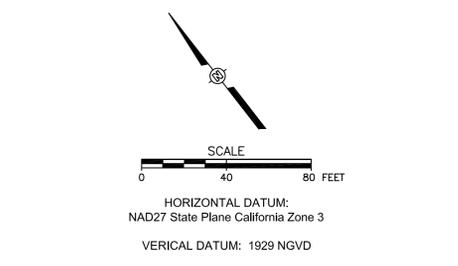
- As-Built Legend**
- UNMAPPED STORM DRAIN OR SANITARY SEWER LINE FOUND AND REMOVED
 - UNMAPPED DROP INLET, MANHOLE, CLEANOUT, OR OTHER VERTICAL STRUCTURE FOUND AND REMOVED
 - TRENCH EXCAVATION, BOTTOM OF SLOPE
 - BOUNDARY OF SEWER/STORM TRENCH RADIOLOGICAL SURVEY UNIT
 - BUILDING REMOVED UNDER THIS CONTRACT

- Radiological Site Legend**
- RADIOLOGICAL SURVEY UNIT
 - IMPACTED BUILDING OR AREA
 - BOUNDARY
 - 15-FOOT BUFFER

- Trench Legend**
- MANHOLE NUMBER
 - BOTTOM DEPTH
 - BOTTOM DEPTH UNKNOWN
 - PIPE SIZE UNKNOWN
 - PIPE SIZE AND TYPE
 - IR SITE BOUNDARY
 - IMPACTED STORM, SANITARY PIPES AND STRUCTURES
 - IMPACTED TRENCH ID INSIDE IR WITH DISTANCE (IN FEET)
 - IMPACTED TRENCH ID OUTSIDE IR WITH DISTANCE (IN FEET)

- 06-DXX-XX-XX** TRENCH SEGMENT IDENTIFICATION
- SEGMENT NO.
 - TRENCH NO.
 - IR SITE ID, 00 IF NON-IR SITE
 - WORK AREA
 - TASK ORDER NUMBER

- Other Legend**
- MONITORING WELL
 - STORM DRAIN
 - SANITARY SEWER
 - FORMER CRANE RAILS
 - FORMER RAILROAD RAILS
 - BUILDING
 - PARCEL BOUNDARY
 - ABANDON
 - AIR LINE
 - CAST IRON PIPE
 - CORRUGATED METAL PIPE
 - CONCRETE
 - CONDENSATE LINE
 - FORCE MAIN
 - FRESH WATER LINE
 - GAS LINE
 - PERFORATED
 - POLYVINYL CHLORIDE
 - REINFORCED CONCRETE PIPE
 - STORM DRAIN LINE
 - SANITARY SEWER LINE
 - STEAM LINE
 - SALT WATER LINE
 - UNKNOWN
 - VITRIFIED CLAY PIPE



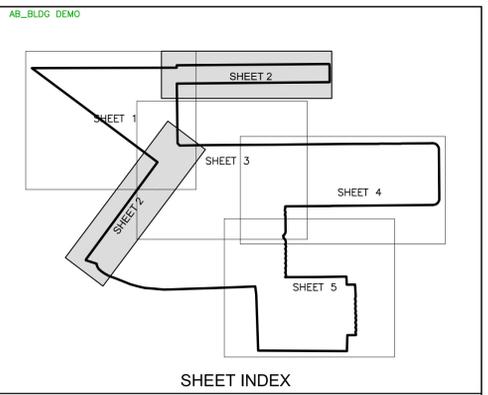
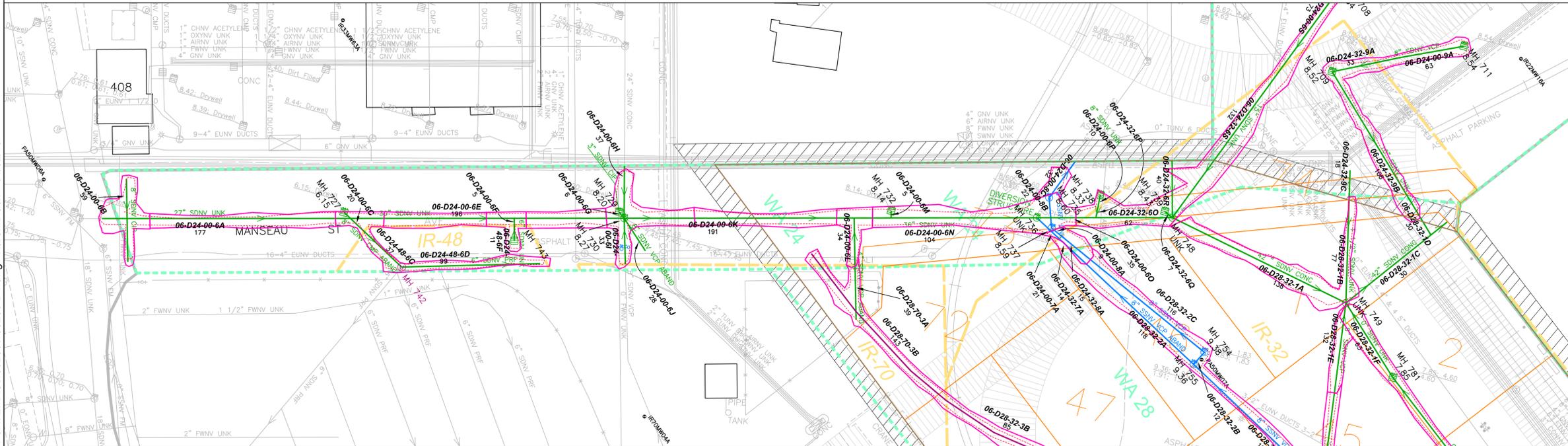
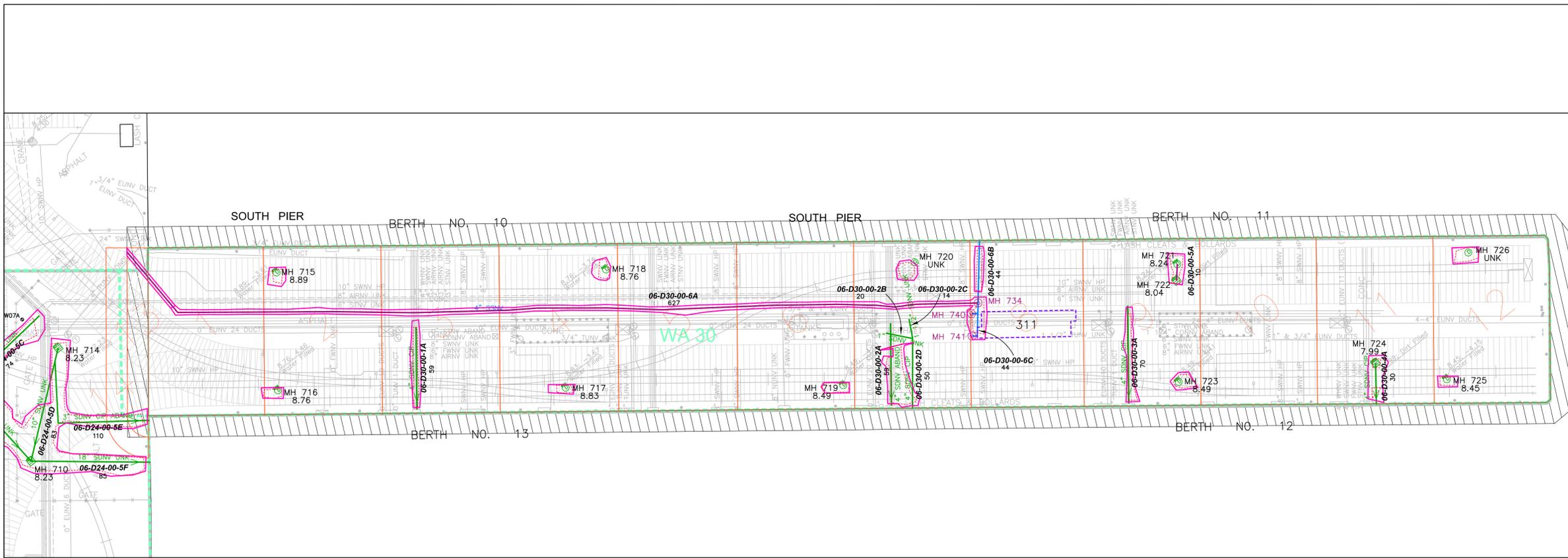
Shaw

U.S. Department of the Navy
BRAC PMO West
San Diego, California

**AS-BUILT
PARCEL D-1 RADIOLOGICAL REMEDIATION
SHEET 1**

RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
PARCEL D-1
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

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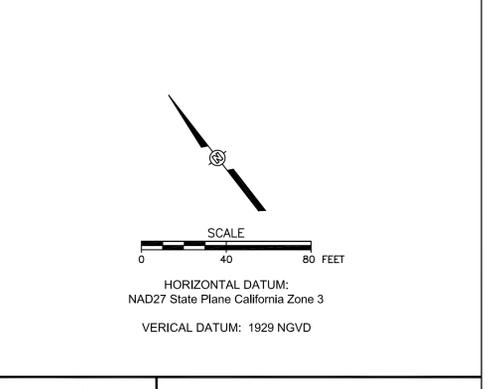
- As-Built Legend**
- UNMAPPED STORM DRAIN OR SANITARY SEWER LINE FOUND AND REMOVED
 - UNMAPPED DROP INLET, MANHOLE, CLEANOUT, OR OTHER VERTICAL STRUCTURE FOUND AND REMOVED
 - TRENCH EXCAVATION, BOTTOM OF SLOPE
 - BOUNDARY OF SEWER/STORM TRENCH RADIOLOGICAL SURVEY UNIT
 - BUILDING REMOVED UNDER THIS CONTRACT

- Radiological Site Legend**
- RADIOLOGICAL SITE SURVEY UNIT BOUNDARY
 - IMPACTED BUILDING OR AREA
 - 15-FOOT BUFFER

- Trench Legend**
- MANHOLE NUMBER
 - BOTTOM DEPTH
 - BOTTOM DEPTH UNKNOWN
 - PIPE SIZE UNKNOWN
 - PIPE SIZE AND TYPE
 - IR SITE BOUNDARY
 - IMPACTED STORM, SANITARY PIPES AND STRUCTURES
 - IMPACTED TRENCH ID INSIDE IR WITH DISTANCE (IN FEET)
 - IMPACTED TRENCH ID OUTSIDE IR WITH DISTANCE (IN FEET)

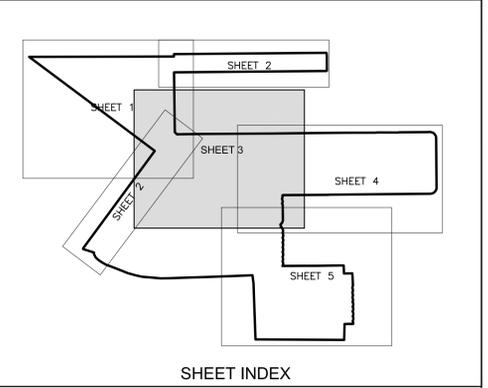
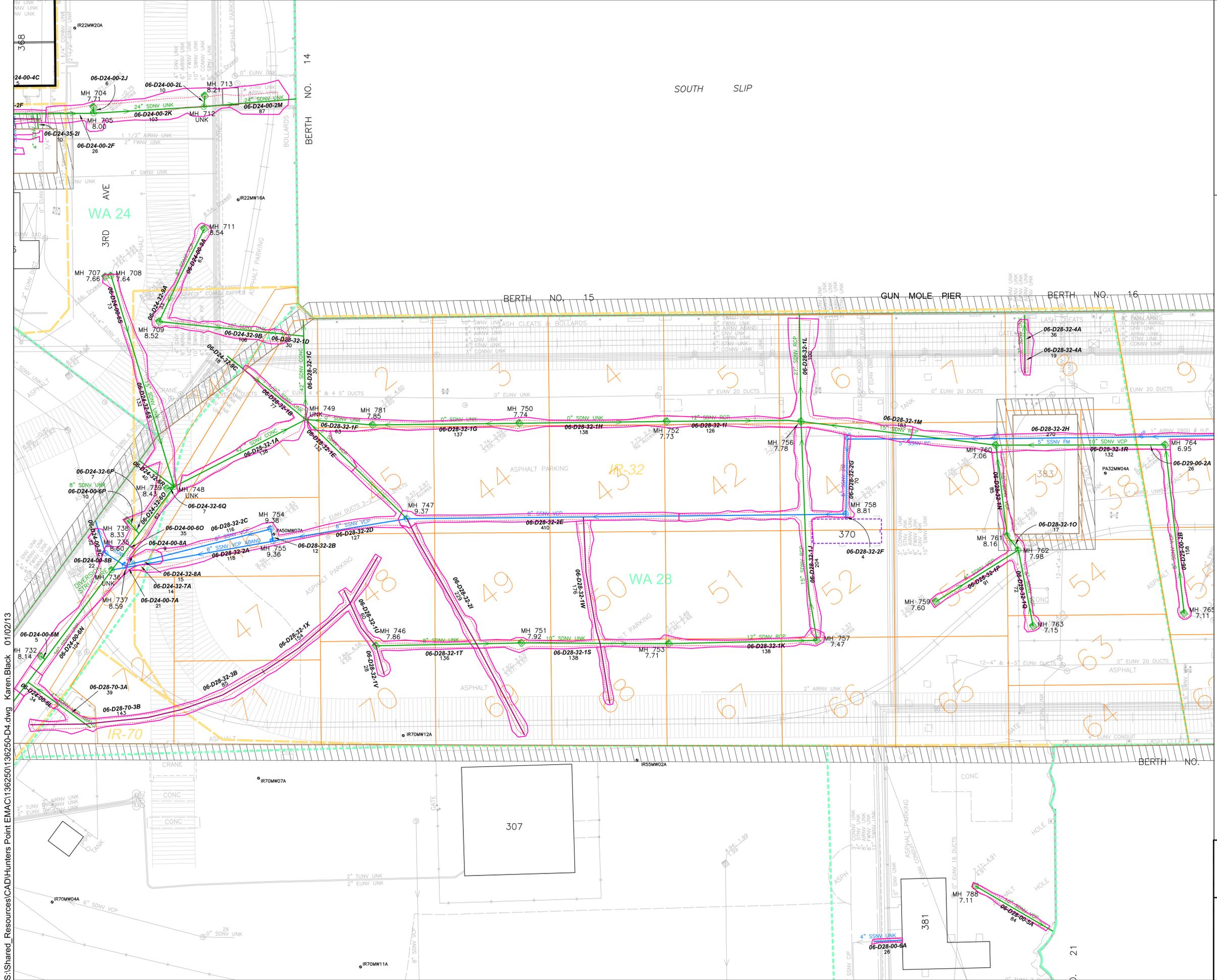
- 06-DXX-XX-XX** TRENCH SEGMENT IDENTIFICATION
- SEGMENT NO.
 - TRENCH NO.
 - IR SITE ID, 00 IF NON-IR SITE
 - WORK AREA
 - TASK ORDER NUMBER

- Other Legend**
- MONITORING WELL
 - STORM DRAIN
 - SANITARY SEWER
 - FORMER CRANE RAILS
 - FORMER RAILROAD RAILS
 - BUILDING
 - PARCEL BOUNDARY
 - ABANDON AIR LINE
 - CAST IRON PIPE
 - CORRUGATED METAL PIPE
 - CONCRETE
 - CONDENSATE LINE
 - FORCE MAIN
 - FRESH WATER LINE
 - GAS LINE
 - PERFORATED
 - POLYVINYL CHLORIDE
 - REINFORCED CONCRETE PIPE
 - STORM DRAIN LINE
 - SANITARY SEWER LINE
 - STEAM LINE
 - SALT WATER LINE
 - UNKNOWN
 - VITRIFIED CLAY PIPE



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San Diego, California

**AS-BUILT
PARCEL D-1 RADIOLOGICAL REMEDIATION
SHEET 2**
RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
PARCEL D-1
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA



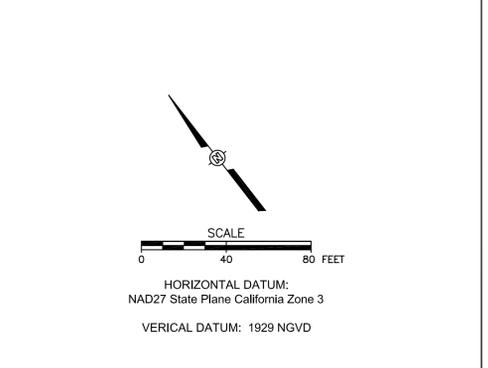
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 - UNMAPPED DROP INLET, MANHOLE, CLEANOUT, OR OTHER VERTICAL STRUCTURE FOUND AND REMOVED
 - TRENCH EXCAVATION, BOTTOM OF SLOPE
 - BOUNDARY OF SEWER/STORM TRENCH RADIOLOGICAL SURVEY UNIT
 - BUILDING REMOVED UNDER THIS CONTRACT

- Radiological Site Legend**
- RADIOLOGICAL SURVEY UNIT BOUNDARY
 - IMPACTED BUILDING OR AREA
 - 15-FOOT BUFFER

- Trench Legend**
- MH 710 8.23 OR UNK
 - BOTTOM DEPTH UNKNOWN
 - PIPE SIZE UNKNOWN
 - PIPE SIZE AND TYPE
 - IR SITE BOUNDARY
 - IMPACTED STORM, SANITARY PIPES AND STRUCTURES
 - IMPACTED TRENCH ID INSIDE IR WITH DISTANCE (IN FEET)
 - IMPACTED TRENCH ID OUTSIDE IR WITH DISTANCE (IN FEET)

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 - TRENCH NO.
 - IR SITE ID, 00 IF NON-IR SITE
 - WORK AREA
 - TASK ORDER NUMBER

- Other Legend**
- MONITORING WELL
 - STORM DRAIN
 - SANITARY SEWER
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 - FORMER RAILROAD RAILS
 - BUILDING
 - WORK AREA BOUNDARY
 - PARCEL BOUNDARY
 - ABANDON
 - AIR LINE
 - CAST IRON PIPE
 - CORRUGATED METAL PIPE
 - CONCRETE
 - CONDENSATE LINE
 - FORCE MAIN
 - FRESH WATER LINE
 - GAS LINE
 - PERFORATED
 - POLYVINYL CHLORIDE
 - REINFORCED CONCRETE PIPE
 - STEAM LINE
 - SANITARY SEWER LINE
 - STEAM LINE
 - SALT WATER LINE
 - UNKNOWN
 - VITRIFIED CLAY PIPE





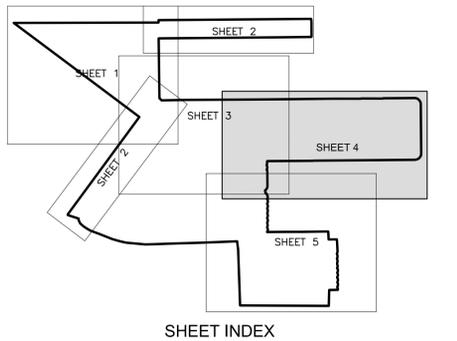
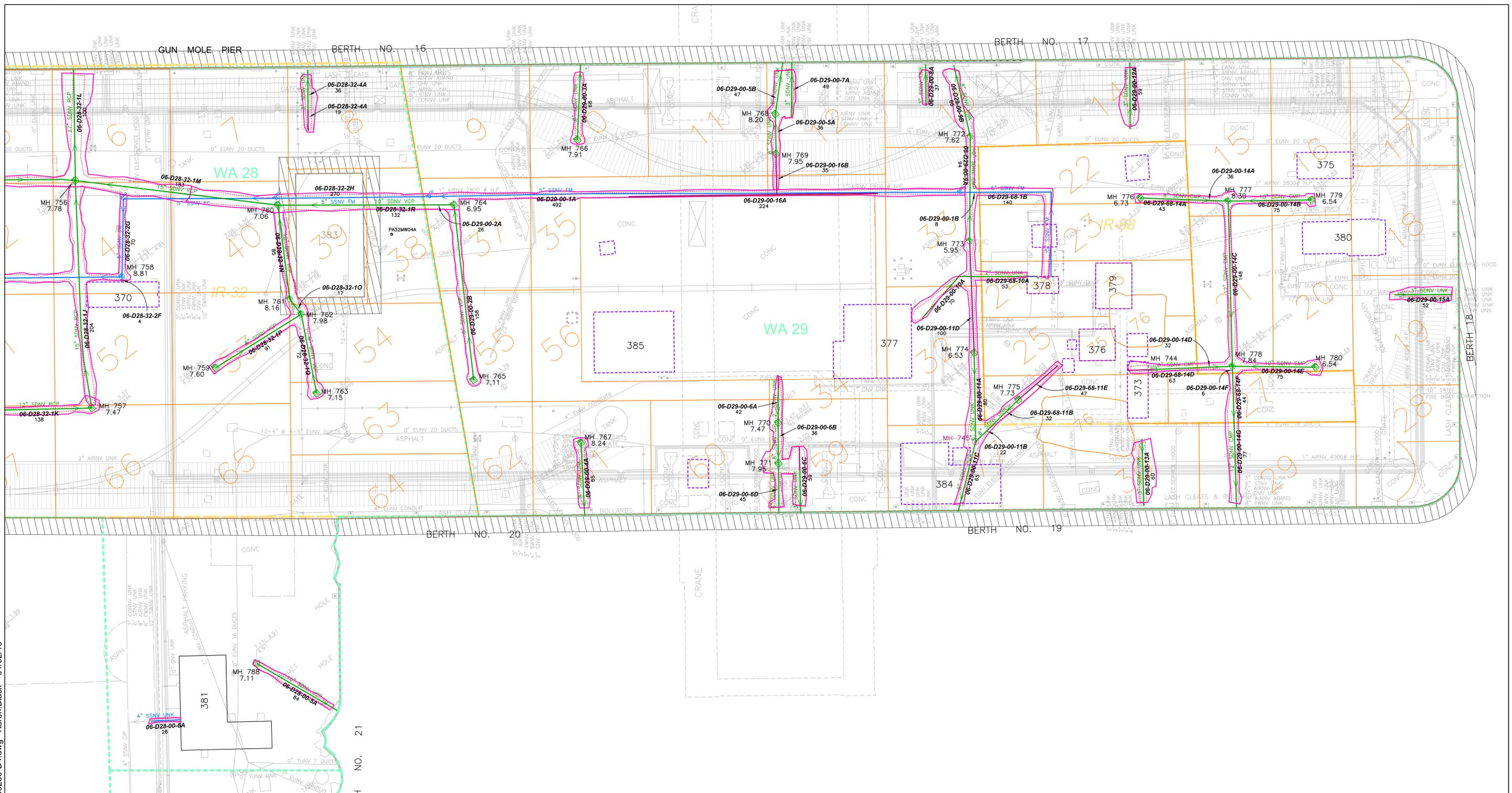
U.S. Department of the Navy
BRAC PMO West
San Diego, California

**AS-BUILT
PARCEL D-1 RADIOLOGICAL REMEDIATION
SHEET 3**

RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
PARCEL D-1
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

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As-Built Legend

- UNMAPPED STORM DRAIN OR SANITARY SEWER LINE FOUND AND REMOVED
- UNMAPPED DROP INLET, MANHOLE, CLEANOUT, OR OTHER VERTICAL STRUCTURE FOUND AND REMOVED
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- BUILDING REMOVED UNDER THIS CONTRACT

Radiological Site Legend

- RADIOLOGICAL SITE SURVEY UNIT BOUNDARY
- IMPACTED BUILDING OR AREA
- 15-FOOT BUFFER

Trench Legend

- MANHOLE NUMBER
- BOTTOM DEPTH
- OR UNK
- BOTTOM DEPTH UNKNOWN
- PIPE SIZE UNKNOWN
- PIPE SIZE AND TYPE
- IR SITE BOUNDARY
- IMPACTED STORM, SANITARY PIPES AND STRUCTURES
- IMPACTED TRENCH ID INSIDE IR WITH DISTANCE (IN FEET)
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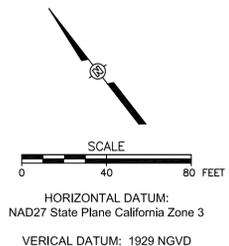
06-DXX-XX-XX TRENCH SEGMENT IDENTIFICATION

- SEGMENT NO.
- TRENCH NO.
- IR SITE ID, 00 IF NON-IR SITE
- WORK AREA
- TASK ORDER NUMBER

Other Legend

- MONITORING WELL
- STORM DRAIN
- SANITARY SEWER
- FORMER CRANE RAILS
- FORMER RAILROAD RAILS
- BUILDING
- WORK AREA BOUNDARY
- PARCEL BOUNDARY

- ABAND ABANDON
- ARNV AIR LINE
- CIP CAST IRON PIPE
- CMP CORRUGATED METAL PIPE
- CONC CONCRETE
- CONNV CONDENSATE LINE
- FM FORCE MAIN
- FWNV FRESH WATER LINE
- GNV GAS LINE
- PRF PERFORATED
- PVC POLYVINYL CHLORIDE
- RCP REINFORCED CONCRETE PIPE
- SDNV STORM DRAIN LINE
- SSNV SANITARY SEWER LINE
- STNV STEAM LINE
- SWNV SALT WATER LINE
- UNK UNKNOWN
- VCP VITRIFIED CLAY PIPE

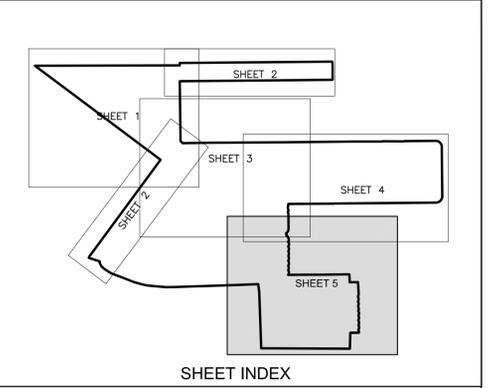


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San Diego, California

**AS-BUILT
PARCEL D-1 RADIOLOGICAL REMEDIATION
SHEET 4**

RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
PARCEL D-1
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

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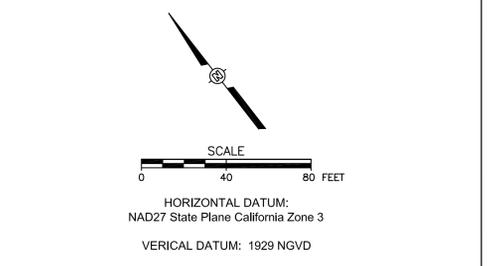
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 - UNMAPPED DROP INLET, MANHOLE, CLEANOUT, OR OTHER VERTICAL STRUCTURE FOUND AND REMOVED
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 - BOUNDARY OF SEWER/STORM TRENCH RADIOLOGICAL SURVEY UNIT
 - BUILDING REMOVED UNDER THIS CONTRACT

- Radiological Site Legend**
- RADIOLOGICAL SITE SURVEY UNIT
 - IMPACTED BUILDING OR AREA
 - 15-FOOT BUFFER

- Trench Legend**
- MANHOLE NUMBER
 - BOTTOM DEPTH
 - BOTTOM DEPTH UNKNOWN
 - PIPE SIZE UNKNOWN
 - PIPE SIZE AND TYPE
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 - IMPACTED STORM, SANITARY PIPES AND STRUCTURES
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 - TASK ORDER NUMBER

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 - SALT WATER LINE
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San Diego, California

**AS-BUILT
PARCEL D-1 RADIOLOGICAL REMEDIATION
SHEET 5**
RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT
PARCEL D-1
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

Appendix D

Work Variances

Work Variance

Project Name: <u>HPS CTO 6 Radiological Remediation and Support, Parcel D-1</u>		
Project Number: <u>136250</u>	Project Manager: <u>Frank Hackett</u>	WV #: <u>1</u>
Contract Number: <u>N62473-08-D-8822</u>	SWDIV RPM: <u>James Whitcomb</u>	Date: <u>04/07/2011</u>
CTO Number: <u>CTO 0006</u>	SWDIV CS: <u>Cynthia Mafara</u>	
Item: <u>Change of Radiological Posting Reqmts</u>		Primary WBS: _____

Description (Include Action Taken to Date):
1. Radiation Protection Plan, Section 3.14.4- Contamination Area
 Section 3.14.4, paragraph 1, requires that soil excavation areas are posted as Contamination Areas (CA). Posting soil excavation areas as CA is not a shipyard standard practice and is not consistent with base-wide contractor posting practices.

Recommendations / Proposed Corrective Action (Include Justification, if Needed):
1. Revise Radiation Protection Plan, Section 3.14.4- Contamination Area, paragraph 1, deleting "and for any soil excavation area".

Aprx range of Cost Impact None	Potential Schedule Impact None	WBS Information <input type="checkbox"/> WBS Code(s) Opened to Capture Cost
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Applicable Document(s):
 Radiation Protection Plan, Parcel D-1 Radiological Remediation and Support, Hunters Point Shipyard, San Francisco, CA July 19, 2010.

Disposition of Work Variance <i>* To be completed by Project Manager *</i>	Type of Change:
<input type="checkbox"/> Monitor: No notice to Navy Review by _____ (Date) <input type="checkbox"/> E-mail Notification to Navy <input type="checkbox"/> Obtain Technical Direction Letter <input type="checkbox"/> Notice of Change <input type="checkbox"/> Request for Additional Funds (RAF) <input type="checkbox"/> Other (Please Comment)	Additional Comments: <hr/> Approvals Project Manager: _____ Date: _____ PMO Contracts Manager: _____ Date: _____ Project Distribution: QC Manager ___ Site Superintendent ___ CSE ___ ROICC ___

Work Variance

This form documents a newly discovered or developing situation. Submitting a Work Variance (WV) to the PMO allows a PM to direct a variation in work that may put the company at financial risk **for up to one business day**. During that time, the PM gathers additional information, assesses the situation and coordinates with the IT Contracts Administration Manager (and others, as appropriate) to determine further actions.

Close coordination with the Client is expected throughout the process.

However, a WV form does not require Client review or approval; it depends solely on the good judgment of the PM to act in the best interest of the Client and the company. By itself, a **WV does not seek anything** (though it may provide the documentation to support a request for additional funding or guidance).

Work Variance

Shaw Environmental & Infrastructure, Inc.

3.14.4 Contamination Area

A Contamination Area is any area inside the RCA that approaches or has the potential to exceed the administrative controls threshold values for surface contamination listed in Table 3. Contamination is defined as quantities of radioactive material in excess of the surface or soil values listed in Table 3.

Entry into a Contamination Area has the same requirements specified for RCA entry plus RCT coverage, and any other controls specified in the RWP. Visitors to the site will not be allowed to enter Contamination Areas.

At a minimum, a Contamination Area boundary may be delineated with rope that is specially colored to signify a radiation hazard/delineation (rad rope) supported on posts. More substantial barriers, such as temporary or permanent fencing, may be used as necessary.

A Contamination Area is posted with a yellow sign with a magenta or black radiation symbol (trefoil) and magenta or black lettering (may be printed on a white insert) that states “Caution - Contamination Area, RWP Required for Entry” in English and Spanish and any other information specified by the RCS. A minimum of one sign shall be posted on each straight run of the Contamination Area boundary. Additional signs should be placed on long (greater than 60 feet) runs of the boundary.

3.14.5 High Contamination Area

A High Contamination Area is any area within the RCA that approaches or has the potential to exceed the engineering controls threshold values for surface contamination or soil listed in Table 3. Entry requirements for High Contamination Areas are the same as those specified for Contamination Areas plus additional controls and PPE as specified in the applicable RWP. Visitors to the site will not be allowed to enter High Contamination Areas.

At a minimum, a High Contamination Area boundary may be delineated with rad rope supported on posts. More substantial barriers, such as temporary or permanent fencing, may be used.

A High Contamination Area is posted with a yellow sign with a magenta or black radiation symbol (trefoil) and magenta or black lettering (may be printed on a white insert) that states “Caution - High Contamination Area, RWP Required for Entry” in English and Spanish and any other information specified by the RCS. A minimum of one sign shall be posted on each straight run of the High Contamination Area boundary. Additional signs should be placed on long (greater than 60 feet) runs of the boundary.

Work Variance

Project Name: <u>HPS CTO 6 Radiological Remediation and Support, Parcel D-1</u>		
Project Number: <u>136250</u>	Project Manager: <u>Frank Hackett</u>	WV #: <u>2</u>
Contract Number: <u>N62473-08-D-8822</u>	SWDIV RPM: <u>Chris Yantos</u>	Date: <u>08/24/2011</u>
CTO Number: <u>CTO 0006</u>	SWDIV CS: <u>Cynthia Mafara</u>	
Item: <u>Delete FIDLER survey requirements.</u>		Primary WBS: _____

Description (Include Action Taken to Date):

1. Task Specific Plan, Gun Mole Pier Area Scoping Survey, Section 2.7- Gamma Scans
 Section 2.7, paragraph 2: Requires performance of FIDLER surveys on the Gun Mole Pier asphalt surfaces prior to asphalt removal.

Recommendations / Proposed Corrective Action (Include Justification, if Needed):

Delete requirement to perform FIDLER surveys on the remaining asphalt covered portions of the Gun Mole Pier. This remaining surface area, the newly acquired RSY section, contains Gun Mole Pier Survey Units 46, 47, 48, 49, 50, 51, 66, 67, 68, 69, 70, 71, 72 and portions of 73. .

1. Navy RASO (Slack) and RPM (Yantos) determined that the remaining Gun Mole Pier asphalt covered surfaces do not require FIDLER survey. .

Aprx range of Cost Impact	Potential Schedule Impact	WBS Information
None	None	<input type="checkbox"/> WBS Code(s) Opened to Capture Cost

Applicable Document(s):

Task Specific Plan, Gun Mole Pier Area Scoping Survey, Hunters Point Shipyard, San Francisco, CA Jan 2011.

Disposition of Work Variance	Type of Change:
* To be completed by Project Manager *	
<input type="checkbox"/> Monitor: No notice to Navy Review by _____ (Date)	Additional Comments:
<input type="checkbox"/> E-mail Notification to Navy	
<input type="checkbox"/> Obtain Technical Direction Letter	
<input type="checkbox"/> Notice of Change	Approvals
<input type="checkbox"/> Request for Additional Funds (RAF)	Project Manager: _____ Date: _____ PMO Contracts Manager: _____ Date: _____
<input type="checkbox"/> Other (Please Comment)	Project Distribution: QC Manager ___ Site Superintendent ___ CSE ___ ROICC ___

Work Variance

This form documents a newly discovered or developing situation. Submitting a Work Variance (WV) to the PMO allows a PM to direct a variation in work that may put the company at financial risk **for up to one business day**. During that time, the PM gathers additional information, assesses the situation and coordinates with the IT Contracts Administration Manager (and others, as appropriate) to determine further actions.

Close coordination with the Client is expected throughout the process.

However, a WV form does not require Client review or approval; it depends solely on the good judgment of the PM to act in the best interest of the Client and the company. By itself, a **WV does not seek anything** (though it may provide the documentation to support a request for additional funding or guidance).

FIELD WORK VARIANCE

Project Name: HPNS CTO 006 Parcel D-1 Radiological Radiological Remediation		DCN: SHAW-8822-0006-0146
Project Number: 136250	Project Manager: Ulrika Messer	WV #: 003
Contract Number: N62473-08-D-8822	SWDIV RPM: Chris Yantos	Date: 6/19/2012
CTO Number: CTO 0006	SWDIV CS: Cynthia Mafara	
Item: Instrument Background & Source Response Check Requirem.		Primary WBS: _____

Description (Include recommended action to resolve changed condition and action taken to date)
Final Radiological Work Plan, Section 7.0 Instrumentation, 7.1.2 Daily Performance
 Change Daily Performance Checks - Work Plan currently requires that instrument background and source response checks be performed twice a day, one set of instrument checks is performed as a pre-use check, the other, at the end of the shift, as a post-use check. **Action:** Delete the words "and end". **CHANGE TEXT TO READ:** " Radiological survey instruments will be function checked (background and source response) at the beginning of each shift in accordance with Shaw SOP T-RA-006: Radiological Controls Portable Instrument Procedure. Only instruments that comply with the pre-determined instrument specific response range may be used".

Reason for Change
 End of shift background and source response checks are a high-level effort without performance and/or quality benefit. The pre-use check in the morning would perform as an end-of-shift response check for the previous day and capture any potential instrument deficiency. Consequently, the end of shift check requirement is removed.

Technical Justification - See above

Estimated Cost Impact None	Estimated Schedule Impact None	WBS Information <input type="checkbox"/> WBS Code Opened to Capture Cost Task Title: WBS Code:
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Applicable Document(s)
 Final Parcel D-1 Radiological Work Plan

<p>PMO Disposition of Work Variance</p> <p><input type="checkbox"/> Monitor; No notice to Navy Review by _____ (Date)</p> <p><input checked="" type="checkbox"/> E-Mail Notification to Navy</p> <p><input type="checkbox"/> Notice of Potential Impact (NOPI)</p> <p><input type="checkbox"/> Request for Additional Funds (RAF)</p> <p><input type="checkbox"/> Other (Please Comment)</p>	<p>Type of Change: _____</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Additional Comments WV prepared by - Raymond Schul - 06/18/2012</p> </div> <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 30%;">Approvals</td> <td style="width: 30%;">Ulrika T. Messer</td> <td style="width: 40%;">Date: _____</td> </tr> <tr> <td>Project Manager</td> <td>Messer</td> <td></td> </tr> <tr> <td>PMO Contracts Manager</td> <td>N/A</td> <td>Date: _____</td> </tr> </table>	Approvals	Ulrika T. Messer	Date: _____	Project Manager	Messer		PMO Contracts Manager	N/A	Date: _____
Approvals	Ulrika T. Messer	Date: _____								
Project Manager	Messer									
PMO Contracts Manager	N/A	Date: _____								

FIELD WORK VARIANCE

Project Name: HPNS CTO 6 FINAL WORK PLAN Parcel D-1 SD and SS Removal	DCN: SHAW-8822-0006-0148	
Project Number: 136250	Project Manager: Ulrika Messer	WV #: 4
Contract Number: N62473-08-D-8822	SWDIV RPM: Chris Yantos	Date: 9/5/2012
CTO Number: CTO 0006	SWDIV CS: Cynthia Mafara	
Item: Revision to removed asphalt disposition requirements.	Primary WBS: 136250	

Description (Include recommended action to resolve changed condition and action taken to date)

Project Work Plan Section 7.8.3 requires the control of removed asphalt as LLRW if radiological contamination is identified in the area where the asphalt was removed. Asphalt staged in Survey Unit (SU) point of origin designated piles (approx 3,000 cy), by procedure, requires control as LLRW due to identified levels of Cs137 radioactivity from the soil from which the asphalt was removed from.

ACTION: 1) Revise text, 3rd paragraph that reads: "If there is any indication that the soils underlying the asphalt or concrete are radiologically impacted, the removed pavement will be classified as LLRW" to read: " If evaluation of in-process asphalt removal surveys and soil/asphalt sampling provide any indication that the removed asphalt may be potentially radiologically impacted, the removed asphalt will be classified as LLRW".

2) Crush HPNS South Pier (SP) and Gun Mole Pier (GMP) staged asphalt and return to SP and GMP as surface cover.

3) Disposition GMP SU 26 asphalt as LLRW.

See Technical Justification below.

Reason for Change

The reason for variance is to permit the minimization of LLRW by implementing additional evaluation requirements.

Technical Justification - The soil samples taken to characterize the soils below the removed asphalt, may not accurately represent levels of radioactivity within the removed asphalt:

1. Gamma scan measurements performed on the asphalt surface prior to the removal of the asphalt did not detect the presence of radioactivity that would implement a LLRW control requirement for the asphalt.
 2. Gamma scan and static measurements performed during the asphalt removal process did not detect the presence of radioactivity that would implement a LLRW control requirement of the removed asphalt or the underlying soils.
 3. Asphalt and surface soil samples taken during the asphalt removal process at scan "investigation" locations did not detect the presence of radioactivity that would implement a LLRW control requirement of the removed/sampled asphalt or the surface soil in these investigation locations.
 4. The average quantity of radioactivity detected in the soil samples obtained under this asphalt (total volume= 2,809 cy) would not be a significant cross contamination concern due to the level of radioactivity or migration of radioactivity in contacting the asphalt above:
 - GMP average Cs137 radioactivity = 0.049 pCi/gm
 - GMP average Ra226 radioactivity = N/A
 - SP average Cs137 radioactivity = 0.041 pCi/gm
 - SP average Ra226 radioactivity = 0.765 pCi/gm-Maintaining a conservative approach in the evaluation and control of shipyard materials, the asphalt from GMP surface SU 26 is not included in this evaluation, the asphalt from SU 26 (175 cy) will be dispositioned as LLRW.
 5. The maximum concentration of Cs137 and Ra226 (where applicable) radioactivity detected in the soil samples taken from the location of removed the asphalt, if evenly distributed over the surface of the removed asphalt, following the project release criteria/work plans, would not require that the asphalt be controlled as LLRW. See attached spreadsheet data which illustrates the maximum activity concentrations and the resulting potential dpm/100cm² values for both Cs137 and Ra226.
- Based on this review, radiological impacts to the recently (2011/2012) removed asphalt from historical radiological activities is not expected.

FIELD WORK VARIANCE

Estimated Cost Impact Reduced disposal cost to Navy	Estimated Schedule Impact 1 week	WBS Information <input type="checkbox"/> WBS Code Opened to Capture Cost Task Title: WBS Code:
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Applicable Document(s)

Final Project Work Plan, Parcel D-1 Storm Drain and Sanitary Sewer Removal, Hunters Point Shipyard, San Francisco, California July 14, 2010

PMO Disposition of Work Variance <input type="checkbox"/> Monitor; No notice to Navy Review by _____ (Date) <input checked="" type="checkbox"/> E-Mail Notification to Navy <input type="checkbox"/> Notice of Potential Impact (NOPI) <input type="checkbox"/> Request for Additional Funds (RAF) <input type="checkbox"/> Other (Please Comment)	Type of Change: _____ <div style="border: 1px solid black; padding: 5px; min-height: 100px;"> Additional Comments Prepared by Raymond Schul, PRSO 9/24/2012 </div>						
	<table style="width: 100%;"> <tr> <td style="width: 50%;">Approvals</td> <td style="width: 50%;"></td> </tr> <tr> <td style="padding-left: 20px;"> Project Manager <u>Ulrika T. Messer</u> </td> <td style="padding-left: 20px;"> Date: _____ </td> </tr> <tr> <td style="padding-left: 20px;"> PMO Contracts Manager _____ </td> <td style="padding-left: 20px;"> Date: _____ </td> </tr> </table>	Approvals		Project Manager <u>Ulrika T. Messer</u>	Date: _____	PMO Contracts Manager _____	Date: _____
Approvals							
Project Manager <u>Ulrika T. Messer</u>	Date: _____						
PMO Contracts Manager _____	Date: _____						

Digitally signed by Ulrika T. Messer.
 DN: cn=Ulrika T. Messer, o=1215455, Federal, email=ulrika.messer@shawgrp.com, c=US
 Date: 2012.09.20 15:56:00 -0700

FIELD WORK VARIANCE

Project Name: <u>HPNS CTO 6 FINAL TSP Addendum GMP Area Scoping Survey</u>		DCN: <u>SHAW-8822-0006-0148</u>
Project Number: <u>136250</u>	Project Manager: <u>Ulrika Messer</u>	WV #: <u>5</u>
Contract Number: <u>N62473-08-D-8822</u>	SWDIV RPM: <u>Chris Yantos</u>	Date: <u>10/3/2012</u>
CTO Number: <u>CTO 0006</u>	SWDIV CS: <u>Cynthia Mafara</u>	
Item: <u>Modification of Surface Scan Practice</u>		Primary WBS: <u>136250</u>

Description (Include recommended action to resolve changed condition and action taken to date)

TSP Section 3.4 Utility Corridors- Requires surveys of 25% of the corridors interior surface areas. This has been performed for GMP utility corridors GEC01, GEC02 and GEC03, but cannot be performed for utility corridor GEC04 because of health and safety concerns due to presence of deteriorated asbestos lagged piping. Access is prevented until asbestos material is abated, which can only be conducted by a licensed asbestos abatement contractor.

ACTION: 1) Revise text, 1st paragraph, 3rd sentence from "As a result, an investigative survey with a coverage goal of 25 percent of the total interior surface area of the corridors shall be performed. To achieve this coverage goal, it is assumed that approximately 5 m² of survey of accessible corridor surfaces will be performed every 6 meters (20 linear feet)." to read; "As a result, an investigative survey with a coverage goal of 25 percent of the total interior surface area of the corridors shall be performed for corridors GEC01, GEC02 and GEC03, 25 percent of the total accessible exterior surface area shall be performed for corridor GEC04. To achieve this coverage goal, it is assumed that approximately 5 m² of survey of the accessible corridor surfaces will be performed approximately every 12 meters (~40 linear feet)." See Technical Justification below.

Reason for Change

The reason for variance is to permit surveys of the utility corridor's accessible surface areas without disturbing ACM.

Technical Justification - NA

1. Health and Safety Concern

Estimated Cost Impact	Estimated Schedule Impact	WBS Information
No impact on project costs. Reduced disposal cost to Navy.	None	<input type="checkbox"/> WBS Code Opened to Capture Cost
		Task Title:
		WBS Code:

Applicable Document(s)

Final Task Specific Plan Addendum, Gun Mole Pier Area Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California June 2012

PMO Disposition of Work Variance	Type of Change: _____
<input type="checkbox"/> Monitor; No notice to Navy Review by _____ (Date)	<div style="border: 1px solid black; padding: 5px;"> Additional Comments Prepared by Raymond Schul, PRSO 10/03/2012 </div>
<input checked="" type="checkbox"/> E-Mail Notification to Navy	
<input type="checkbox"/> Notice of Potential Impact (NOPI)	
<input type="checkbox"/> Request for Additional Funds (RAF)	
<input type="checkbox"/> Other (Please Comment)	
<p>Approvals</p> <p>Project Manager <u>Ulrika T. Messer</u> <small>Digitally signed by Ulrika T. Messer DN: cn=Ulrika T. Messer, o=1215455, Federal, email=ulrika.messer@shawgrp.com, c=US Date: 2012.10.04 11:36:27 -0700</small></p> <p>PMO Contracts Manager _____</p>	<p>Date: _____</p> <p>Date: _____</p>

FIELD WORK VARIANCE

Project Name: <u>HPNS CTO 6 FINAL TSP Addendum SP Area Scoping Survey</u>		DCN: <u>SHAW-8822-0006-0148</u>
Project Number: <u>136250</u>	Project Manager: <u>Ulrika Messer</u>	WV #: <u>6</u>
Contract Number: <u>N62473-08-D-8822</u>	SWDIV RPM: <u>Chris Yantos</u>	Date: <u>10/3/2012</u>
CTO Number: <u>CTO 0006</u>	SWDIV CS: <u>Cynthia Mafara</u>	
Item: <u>Modification of Practice</u>		Primary WBS: <u>136250</u>

Description (Include recommended action to resolve changed condition and action taken to date)

TSP Section 3.3 Utility Corridors- Requires surveys of 25% of the corridors interior surface areas. This cannot be performed for utility corridor SECO1 because of health and safety concerns due to presence of deteriorated asbestos lagged piping. Access to interior surfaces is prevented until asbestos material is abated, which can only be conducted by a licensed asbestos abatement contractor.

ACTION: 1) Revise text, 1st paragraph, 3rd sentence from "As a result, an investigative survey with a coverage goal of 25 percent of the total interior surface area of the corridors shall be performed. To achieve this coverage goal, it is assumed that approximately 5 m² of survey of accessible corridor surfaces will be performed every 6 meters (20 linear feet)." to read; " "As a result, an investigative survey with a coverage goal of 25 percent of the total accessible exterior surface area shall be performed. To achieve this coverage goal, it is assumed that approximately 5 m² of survey of the accessible corridor surfaces will be performed approximately every 12 meters (~40 linear feet).""

See Technical Justification below.

Reason for Change

The reason for variance is to permit surveys of the utility corridor's accessible surface areas without disturbing ACM.

Technical Justification - NA

Health and Safety Concern

Estimated Cost Impact No impact on project cost. Reduced disposal cost to Navy	Estimated Schedule Impact None	WBS Information <input type="checkbox"/> WBS Code Opened to Capture Cost Task Title: WBS Code:
---	--	--

Applicable Document(s)

Final Task Specific Plan Addendum, Gun Mole Pier Area Scoping Survey, Hunters Point Naval Shipyard, San Francisco, California June 2012

PMO Disposition of Work Variance	Type of Change: _____								
<input type="checkbox"/> Monitor; No notice to Navy Review by _____ (Date) <input checked="" type="checkbox"/> E-Mail Notification to Navy <input type="checkbox"/> Notice of Potential Impact (NOPI) <input type="checkbox"/> Request for Additional Funds (RAF) <input type="checkbox"/> Other (Please Comment)	Additional Comments Prepared by Raymond Schul, PRSO 10/03/2012								
	<table style="width: 100%;"> <tr> <td style="width: 50%;">Approvals</td> <td style="width: 50%;">Date: _____</td> </tr> <tr> <td style="text-align: center;">Ulrika I. Messer</td> <td></td> </tr> <tr> <td style="text-align: center;">Project Manager</td> <td></td> </tr> <tr> <td style="text-align: center;">PMO Contracts Manager</td> <td style="text-align: center;">Date: _____</td> </tr> </table>	Approvals	Date: _____	Ulrika I. Messer		Project Manager		PMO Contracts Manager	Date: _____
Approvals	Date: _____								
Ulrika I. Messer									
Project Manager									
PMO Contracts Manager	Date: _____								

Digitally signed by Ulrika I. Messer
DN: cn=Ulrika T. Messer, o=1215455, Federal, email=ulrika.messer@shawgrp.com, c=US
Date: 2012.10.04 11:37:13 -0700'

Appendix E
Completion Inspection Checklists

~~Final~~ **FINAL INSPECTION**
 (This list may be addendum.)

CONTRACT # & TITLE: N62473-08-D-8832; CTO-006; Parcel D-1 Storm Drain and Sanitary Sewer Removal.

CONTRACTOR: Shaw E & I, Inc.

DATE OF INSPECTION: November 20, 2012

INSPECTION PARTY

NAME	TITLE	REPRESENTING
Doug DeLano	CHMM	NAVY BPA
Peter Strogan	Proj. Engr.	ROICC
Mark Vennemeyer	QC Manager	Shaw
Ren Moore	Supervisor	Shaw

1. The contractor hereby acknowledges the construction deficiencies listed below; conditions of workmanship and/or materials that do not comply with the contract requirements, and agrees to correct such deficiencies to meet contract requirements, at no additional cost to the Government, on or before 11/21/12. This is not to be construed as a waiver of the warranty provisions of the contract.

2. Correction of the deficiencies listed below:

a. Construction Deficiencies:

#	Description	Location	Trade	Date completed \ Initials
1	Removal of Rental Fence around Project Site	Parcel D1	Construct	11/20/12 <i>MLV</i>
2	Remove half-buried cable from area	Berth 16	Construct	11/15/12 <i>MLV</i>
3	Paint bright color on any rebar protrusions	South Pier	Construct	N/A – rebar protrusions removed <i>MLV</i>
4	Set fence posts and provide rope barrier around “sandy” area	Corner of Berth 14 & 15	Construct	11/14/12 <i>MLV</i>
5	Cut/remove metal strap protruding from ground	Corner of Berth 14 & 15	Construct	11/14/12 <i>MLV</i>
6	Remove tires (approx 4 total) located in WA-24 and stage in Parcel G pile	WA-24	Construct	11/14/12 <i>MLV</i>
7	Identify and properly manage 55-gal drum located in WA-24	WA-24	Construct	11/14/12 <i>MLV</i>

~~Pre~~ FINAL INSPECTION
(This list may be addendum.)

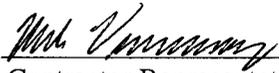
b. Design Deficiencies:

None

c. General Comments:

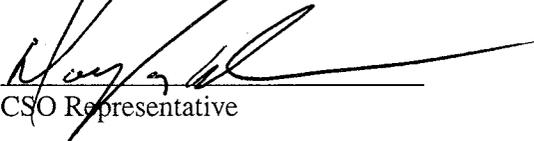
Finalize map of waste piles (e.g., debris, concrete, wood, etc.). Map supplied to Navy, as requested.

Rented fence panels to be picked up by ~~se~~ rental contractor on week of 11/26/12
Cones left behind to indicate obstructions/voids (vaults, wells, trenches, etc.)

Signed: 
Contractor Representative

RPM


ROICC/OICC Representative


CSO Representative

Pre-FINAL INSPECTION

(This list may be addended.)

CONTRACT # & TITLE: N62473-08-D-8832; CTO-006; Parcel D-1 South Pier.

CONTRACTOR: Shaw E & I, Inc.

DATE OF INSPECTION: October 2, 2012

INSPECTION PARTY

NAME	TITLE	REPRESENTING
Mark Vennemeyer	CQC Manager	Shaw
Peter Stroganoff	Project Engineer	Navy ROICC
Owen Chao	Project Engineer	Shaw
Jim Click	Construction Manager	Shaw
Andy Uehisa	Construction Management Technician	Navy ROICC
Doug DeLong	CSO	Navy BRAC

1. The contractor hereby acknowledges the construction items listed below; conditions of workmanship and/or materials that do not comply with the contract requirements, and agrees to correct such items to meet contract requirements, at no additional cost to the Government, on or before close of project. This is not to be construed as a waiver of the warranty provisions of the contract.
2. Correction of the project items listed below:
 - a. Construction Items:

#	Description	Location	Trade	Date completed \ Initials
1	Placement of crushed asphalt on South Pier.	South Pier	Construction	
2	Cover and marking of opened manholes, vaults, and other fall hazards	South Pier	H&S / Construction	
3	Down post and removal of rad postings/signage	South Pier	Radiological Operations	
4				
5				
6				

Pre-FINAL INSPECTION

(This list may be addended.)

b. Design Deficiencies:

Not applicable

c. General Comments:

Utility corridor (SEC-01) will still be accessible after placement of crushed asphalt. Asphalt layer will NOT cover the utility doors or covers.

BRAC CSO requested a fence or other security barrier be put in place at start of South Pier to prevent unauthorized access to potentially dangerous areas (e.g., end of pier). Fence should be equipped with truck gate for South Pier and Gun Mole Pier. This option will need to be discussed with the NAVY RPM and Shaw PM. Shaw will be looking at preliminary pricing to address the matter further.

Pre-FINAL INSPECTION

(This list may be addended.)

CONTRACT # & TITLE: N62473-08-D-8832; CTO-006; Parcel D-1 Storm Drain and Sanitary Sewer Removal.

CONTRACTOR: Shaw E & I, Inc.

DATE OF INSPECTION: October 23, 2012

AREAS OF INSPECTION: Former Building 383

INSPECTION PARTY

NAME	TITLE	REPRESENTING
Doug Delong	CHMM	BRAC-CSO
Peter Stroganoff	Project Engineer	ROICC
Andy Uehisa	CMT	ROICC
Owen Chao	Project Engineer	Shaw
Takeshi Ibuki	RCS	Shaw
Jim Click	Construction Manager	Shaw
Mark Vennemeyer	QC Manager	Shaw

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2. Correction of the project items listed below:

a. Construction Items:

#	Description	Location	Trade	Date completed \ Initials
1	Leveling of area and crushed asphalt layer	383 footprint	Construction	
2				
3				
4				
5				
6				

Pre-FINAL INSPECTION

(This list may be addended.)

b. Design Deficiencies:

Not applicable

c. General Comments:

Final leveling and coverage of area with crushed asphalt to be completed as part of GMP restoration.

Signed: _____
Contractor Representative

ROICC/OICC Representative

Navy RPM

Agency Representative

Pre-FINAL INSPECTION

(This list may be addended.)

CONTRACT # & TITLE: N62473-08-D-8832; CTO-006; Parcel D-1 Storm Drain and Sanitary Sewer Removal.

CONTRACTOR: Shaw E & I, Inc.

DATE OF INSPECTION: October 23, 2012

AREAS OF INSPECTION: Former Building 274

INSPECTION PARTY

NAME	TITLE	REPRESENTING
Doug DeLong	CHMM	BRAC-CSO
Peter Stroganoff	Project Engineer	ROICC
Andy Uehisa	CMT	ROICC
Owen Chao	Project Engineer	Shaw
Takeshi Ibuki	RCS	Shaw
Jim Click	Construction Manager	Shaw
Mark Vennemeyer	QC Manager	Shaw

1. The contractor hereby acknowledges the construction items listed below; conditions of workmanship and/or materials that do not comply with the contract requirements, and agrees to correct such items to meet contract requirements, at no additional cost to the Government, on or before close of project. This is not to be construed as a waiver of the warranty provisions of the contract.

2. Correction of the project items listed below:

a. Construction Items:

#	Description	Location	Trade	Date completed \ Initials
1	Signage to be put in place to warn of "Open Trenches"	Bldg 274 doorways	Health & Safety	
2	Rope barrier put at all entry ways to indicate restricted access	Bldg 274 doorway	Construction	
3				
4				
5				
6				

Pre-FINAL INSPECTION

(This list may be addended.)

b. Design Deficiencies:

Not applicable

c. General Comments:

Trenches inside of building will remain open. Shaw will not fill, nor cover the openings.

Signed: _____
Contractor Representative

ROICC/OICC Representative

Navy RPM

Agency Representative

Pre-FINAL INSPECTION

(This list may be addended.)

CONTRACT # & TITLE: N62473-08-D-8832; CTO-006; Parcel D-1 Storm Drain and Sanitary Sewer Removal.

CONTRACTOR: Shaw E & I, Inc.

DATE OF INSPECTION: October 23, 2012

AREAS OF INSPECTION: Former Building 313/313A/322 Areas

INSPECTION PARTY

NAME	TITLE	REPRESENTING
Doug Delong	CHMM	BRAC-CSO
Peter Stroganoff	Project Engineer	ROICC
Andy Uehisa	CMT	ROICC
Owen Chao	Project Engineer	Shaw
Takeshi Ibuki	RCS	Shaw
Jim Click	Construction Manager	Shaw
Mark Vennemeyer	QC Manager	Shaw

1. The contractor hereby acknowledges the construction items listed below; conditions of workmanship and/or materials that do not comply with the contract requirements, and agrees to correct such items to meet contract requirements, at no additional cost to the Government, on or before close of project. This is not to be construed as a waiver of the warranty provisions of the contract.

2. Correction of the project items listed below:

a. Construction Items:

#	Description	Location	Trade	Date completed \ Initials
1	Final restoration (e.g., spot leveling, smoothing) of area.	WA-24	Construction	
2				
3				
4				
5				
6				

Pre-FINAL INSPECTION

(This list may be addended.)

b. Design Deficiencies:

Not applicable

c. General Comments:

A list of materials to remain on-site (e.g., concrete to be handled by base-wide contractor, drums of waste Non-PCB transformer oil to be managed by base-wide contractor, general debris pile, sheds, etc.) to be supplied to Navy.

Shallow excavation (<1 ft) on West side of WA-24 was pre-existing and is out of scope for Shaw to fill.

Signed: _____
Contractor Representative

ROICC/OICC Representative

Navy RPM

Agency Representative

Pre-FINAL INSPECTION

(This list may be addendum.)

CONTRACT # & TITLE: N62473-08-D-8832; CTO-006; Parcel D-1 Storm Drain and Sanitary Sewer Removal.

CONTRACTOR: Shaw E & I, Inc.

DATE OF INSPECTION: November 13, 2012

INSPECTION PARTY

NAME	TITLE	REPRESENTING
Doug Delong	Environmental Compliance Manager	BRAC-PMO-W
Peter Stroganoff	Project Engineer	ROICC
Owen Chao	Project Engineer	Shaw
Jim Click	Construction Manager	Shaw
Ulrika Messer	Project Manager	Shaw
Takeshi Ibuki	Radiological Supervisor	Shaw
Mark Vennemeyer	Project QC Manager	Shaw

1. The contractor hereby acknowledges the construction deficiencies listed below; conditions of workmanship and/or materials that do not comply with the contract requirements, and agrees to correct such deficiencies to meet contract requirements, at no additional cost to the Government, on or before close of project . This is not to be construed as a waiver of the warranty provisions of the contract.
2. Correction of the deficiencies listed below:

a. Construction Deficiencies:

#	Description	Location	Trade	Date completed \ Initials
1	Removal of Rental Fence around Project Site	Parcel D1	Construct	
2	Remove half-buried cable from area	Berth 16	Construct	
3	Paint bright color on any rebar protrusions	South Pier	Construct	N/A – rebar protrusions removed
4	Set fence posts and provide rope barrier around “sandy” area	Corner of Berth 14 & 15	Construct	11/14/12
5	Cut/remove metal strap protruding from ground	Corner of Berth 14 & 15	Construct	11/14/12
6	Remove tires (approx 4 total) located in WA-24 and stage in Parcel G pile	WA-24	Construct	11/14/12
7	Identify and properly manage 55-gal drum located in WA-24	WA-24	Construct	11/14/12

Pre-FINAL INSPECTION

(This list may be addendum.)

b. Design Deficiencies:

c. General Comments:

Finalize map of waste piles (e.g., debris, concrete, wood, etc.)

Pending approval of Memorandum of Understanding (MoU), fence will be put in place in select areas to secure the South Pier and the Gun Mole Pier.

Appendix F
Photographic Log

PHOTOGRAPH LOG



Photograph 1: Air Monitoring Station near South Pier, Facing South—October 7, 2010



Photograph 2: Pre-Excavation South Pier, Facing Southeast—October 15, 2010

PHOTOGRAPH LOG



Photograph 3: Pre-Excavation Manseau Street, Facing Northeast—October 15, 2010



Photograph 4: Pre-Excavation Gun Mole Pier, Facing Southeast—October 15, 2010

PHOTOGRAPH LOG



Photograph 5: Excavation at Trench Survey Unit 273—October 8, 2010

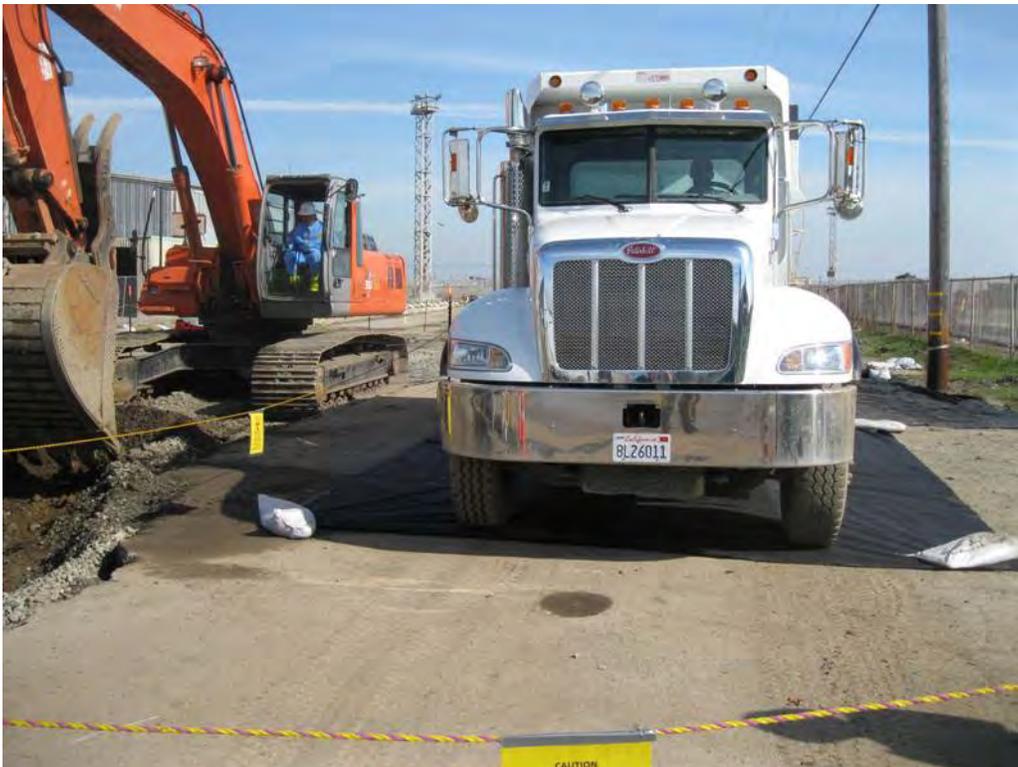


Photograph 6: Removing MH726 at South Pier—October 19, 2010

PHOTOGRAPH LOG



Photograph 7: Removing MH723 at South Pier—October 19, 2010



Photograph 8: Start of excavation at southeast end of Manseau St, facing northeast—November 3, 2010

PHOTOGRAPH LOG



Photograph 9: Scanning out dump truck—November 3, 2010



Photograph 10: Excavated trench segment 06-D24-00-5B, facing east—November 29, 2010

PHOTOGRAPH LOG



Photograph 11: Excavation along trench segment 06-D28-32-1F, facing southeast—December 3, 2010



Photograph 12: Lead abatement at Building 311—December 3, 2010

PHOTOGRAPH LOG



Photograph 13: Taking down the walls inside Building 274—December 7, 2010



Photograph 14: Excavation along trench segment 06-D28-32-1H, facing east—December 7, 2010

PHOTOGRAPH LOG



Photograph 15: Overview of trenching operation at Trench Survey Unit 262, facing northwest—December 7, 2010



Photograph 16: Building 380 demolition, facing southeast—December 8, 2010

PHOTOGRAPH LOG



Photograph 17: Removing tank from Building 375, facing east—December 8, 2010



Photograph 18: Pre-demolition setup at Building 278, facing north—December 8, 2010

PHOTOGRAPH LOG



Photograph 19: Building 375 demolition—December 9, 2010



Photograph 20: Asphalt removal at South Pier, facing east—December 14, 2010

PHOTOGRAPH LOG



Photograph 21: Dust control during Building 370 demolition—December 15, 2010



Photograph 22: Building 383 demolition, facing west—December 21, 2010

PHOTOGRAPH LOG



Photograph 23: Rail removal at end of South Pier—December 21, 2010



Photograph 24: Wooden rail ties removal at end of South Pier—December 15, 2010

PHOTOGRAPH LOG



Photograph 25: Excavation of trench segment 06-D30-00-3A—January 4, 2011



Photograph 26: Placing low-level radioactive waste (LLRW) into bin—January 4, 2011

PHOTOGRAPH LOG



Photograph 27: Breaking Building 383 foundation, facing northwest—January 11, 2011



Photograph 28: Breaking Building 311 foundation and removing sewer pipes—January 17, 2011

PHOTOGRAPH LOG



Photograph 29: Remains of Building 311 foundation with sewer pipe removed—January 24, 2011



Photograph 30: South Pier asphalt/rails/ties stockpiles at Berth 14, facing south—January 24, 2011

PHOTOGRAPH LOG



Photograph 31: Asphalt removal at Gun Mole Pier Survey Unit 20, facing north—January 27, 2011



Photograph 32: Pipe removal along trench segment 06-D28-32-1L, facing west—January 27, 2011

PHOTOGRAPH LOG



Photograph 33: Pipe removal along trench segment 06-D28-32-1L—January 27, 2011



Photograph 34: Asphalt removal in Gun Mole Pier Survey Unit 08, facing west—February 2, 2011

PHOTOGRAPH LOG



Photograph 35: Concrete breaking along trench segment 06-D29-00-11C, facing west—February 2, 2011



Photograph 36: Broken up concrete pad along trench segment 06-D29-68-1B, facing southwest—February 3, 2011

PHOTOGRAPH LOG



Photograph 37: Removing missile launch pad structure underneath Gun Mole Pier crane—February 3, 2011



Photograph 38: Breaking up concrete launch pad on top of trench segment 06-D29-00-6D—February 4, 2011

PHOTOGRAPH LOG



Photograph 39: Gamma walkover survey at South Pier—February 16, 2011



Photograph 40: Asphalt removal at Gun Mole Pier Survey Unit 13, facing north—February 16, 2011

PHOTOGRAPH LOG



Photograph 41: Excavation along trench segment 06-D24-35-2A in Work Area (WA) 24—February 23, 2011



Photograph 42: Excavation along trench segment 06-D29-00-14C in WA 29—March 1, 2011

PHOTOGRAPH LOG



Photograph 43: Removing MH780 in WA 29—March 1, 2011



Photograph 44: Electronic waste stockpile from various Gun Mole Pier buildings—March 3, 2011

PHOTOGRAPH LOG



Photograph 45: Excavation along Trench Survey Unit 268—March 14, 2011



Photograph 46: Removing MH759 in WA 28—March 16, 2011

PHOTOGRAPH LOG



Photograph 47: Excavation along trench segment 06-D28-32-2G in WA 28—March 21, 2011



Photograph 48: Excavation along trench segment 06-D28-32-2E in WA 28—March 22, 2011

PHOTOGRAPH LOG



Photograph 49: Gamma scanning along trench segment 06-D28-32-1J in WA 28—April 1, 2011



Photograph 50: Scanning MH788 near Building 381—April 1, 2011

PHOTOGRAPH LOG



Photograph 51: Demolishing shed underneath southwest footing of Gun Mole Pier crane—April 11, 2011



Photograph 52: Asphalt removal underneath southwest footing of Gun Mole Pier crane—April 12, 2011

PHOTOGRAPH LOG



Photograph 53: Installing silt curtain at northeast corner of Gun Mole Pier—April 13, 2011



Photograph 54: Soil remediation at WA 24—April 28, 2011

PHOTOGRAPH LOG



Photograph 55: Gamma scanning along Manseau Street, WA 24—September 15, 2011



Photograph 56: Excavation along trench segment 06-D28-32-2E in WA 28—September 19, 2011

PHOTOGRAPH LOG



Photograph 57: Excavation around MH747 in WA 28—September 19, 2011



Photograph 58: Asphalt removal in Gun Mole Pier Survey Unit 69—September 20, 2011

PHOTOGRAPH LOG



Photograph 59: Radiological scanning of a manhole in WA 28—September 26, 2011



Photograph 60: Abandoning well PA50MW07A by over-excavation—September 26, 2011

PHOTOGRAPH LOG



Photograph 61: Cutting rails in WA 28, with fire watch—September 29, 2011



Photograph 62: Removing rails in former RSY2 area, WA 28—October 5, 2011

PHOTOGRAPH LOG



Photograph 63: Backfilling at Trench Survey Unit 273, WA 24—October 6, 2011



Photograph 64: Loading approved backfill into dump truck—October 7, 2011

PHOTOGRAPH LOG



Photograph 65: Backfilling along Manseau Street, WA 24—October 10, 2011



Photograph 66: Backfilling/compacting along Trench Survey Unit 268 in WA 28—October 17, 2011

PHOTOGRAPH LOG



Photograph 67: Gamma scanning along Trench Survey Unit 279—October 18, 2011



Photograph 68: Filling bin with LLRW—November 11, 2011

PHOTOGRAPH LOG



Photograph 69: Clearing debris from South Pier Survey Unit 14—November 23, 2011



Photograph 70: Soil remediation underneath Gun Mole Pier crane—December 13, 2011

PHOTOGRAPH LOG



Photograph 71: Grading along Manseau Street for swale installation—December 20, 2011



Photograph 72: Installing geotextile and drain rock on southwest end of swale—December 22, 2011

PHOTOGRAPH LOG



Photograph 73: Installing geotextile and drain rock along Manseau Street—December 28, 2011



Photograph 74: Pneumatic plug used to plug outfall along Berth 15 during tie-in of swale catch basin to MH749—December 28, 2011

PHOTOGRAPH LOG



Photograph 75: Catch basin installed at northeast end of swale, near MH749—December 29, 2011



Photograph 76: View of finished swale along Manseau Street, facing southwest—January 3, 2012

PHOTOGRAPH LOG



Photograph 77: Refilling generator for air monitor to north of South Pier—January 3, 2012



Photograph 78: Soil remediation in WA 29—January 9, 2012

PHOTOGRAPH LOG



Photograph 79: Asphalt crushing operation near Berth 14—January 19, 2012



Photograph 8081: Asphalt crushing operation at WA 25, facing north—February 2, 2012

PHOTOGRAPH LOG



Photograph 81: Asphalt crushing operation at WA 25, facing south—February 6, 2012



Photograph 82: Asphalt stockpile at WA 25, facing west—February 6, 2012

PHOTOGRAPH LOG



Photograph 83: Asphalt crushing operation at WA 25, facing east—February 10, 2012

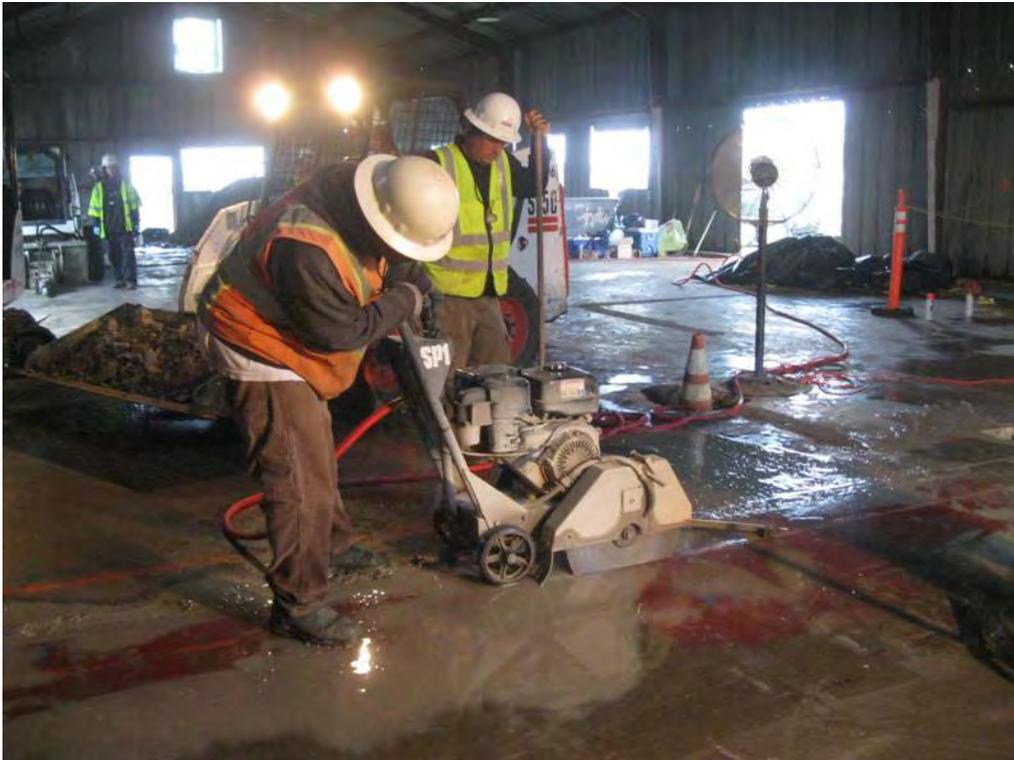


Photograph 84: Saw-cutting concrete inside Building 274—March 12, 2012

PHOTOGRAPH LOG



Photograph 85: Excavating sewer pipe inside Building 274—March 15, 2012



Photograph 86: Saw-cutting concrete inside Building 274—March 15, 2012

PHOTOGRAPH LOG



Photograph 87: Trenching inside Building 274—March 20, 2012



Photograph 88: Cleaning and preparing concrete surface (GV03 near former Building 375) for radiological scanning—May 7, 2012

PHOTOGRAPH LOG



Photograph 89: Removing trench plates along GEC02 in WA 29—May 7, 2012



Photograph 90: Breaking concrete pad at Gun Mole Pier—May 22, 2012

PHOTOGRAPH LOG



Photograph 91: Breaking concrete pad (GCP02) at Gun Mole Pier—May 22, 2012



Photograph 92: Breaking concrete pad (GCP02) with dust control—May 22, 2012

PHOTOGRAPH LOG



Photograph 93: Spreading out concrete pieces for radiological survey—May 24, 2012



Photograph 94: Removing concrete slab from former Building 385—May 24, 2012

PHOTOGRAPH LOG



Photograph 95: Clearing concrete debris near GCP17—May 24, 2012



Photograph 96: Breaking concrete pad GCP14 in WA 28—May 24, 2012

PHOTOGRAPH LOG



Photograph 97: Excavating around former Building 380, facing northeast—June 1, 2012



Photograph 98: Collecting samples along northwest corner of former Building 384—June 1, 2012

PHOTOGRAPH LOG



Photograph 99: Sizing rails (from South Pier) for radiological scanning—June 4, 2012



Photograph 100: Scanning removed concrete at Gun Mole Pier—June 13, 2012

PHOTOGRAPH LOG



Photograph 101: Excavating Survey Unit 76 in Gun Mole Pier—June 21, 2012



Photograph 102: Gamma walkover survey in footprint of former Building 377—June 21, 2012

PHOTOGRAPH LOG



Photograph 103: Performing gamma walkover survey at Survey Unit 76 at Gun Mole Pier—June 26, 2012



Photograph 104: Performing radiological survey on Gun Mole Pier crane footing—July 3, 2012

PHOTOGRAPH LOG



Photograph 105: Performing radiological survey on utility hood at South Pier—July 11, 2012



Photograph 106: Cleaning/preparing concrete surface for radiological survey at South Pier—July 17, 2012

PHOTOGRAPH LOG



Photograph 107: Collecting samples for asbestos analysis from South Pier utility hood—August 4, 2012



Photograph 108: Performing radiological survey on former Building 311 foundation, South Pier—August 13, 2012

PHOTOGRAPH LOG



Photograph 109: Scanned and released concrete stockpile in Parcel G—August 7, 2012



Photograph 110: Hauling stockpiled soils from Survey Unit 76 to Basewide Radiological Contractor's RSY—August 8, 2012

PHOTOGRAPH LOG



Photograph 111: Hauling out scanned and radiologically released scrap metal—August 22, 2012



Photograph 112: Gamma walkover survey on South Pier Survey Unit 14—August 22, 2012

PHOTOGRAPH LOG



Photograph 113: Backfilling Trench Survey Unit 265 in WA 24—August 22, 2012



Photograph 114: Backfilling Trench Survey Unit 265 in WA 24—August 22, 2012

PHOTOGRAPH LOG



Photograph 115: Dust Control—August 28, 2012



Photograph 116: Backfilling around former Building 380—August 28, 2012

PHOTOGRAPH LOG



Photograph 117: Backfilling around former Building 380—August 28, 2012



Photograph 118: Gamma walkover survey in WA 28—September 5, 2012

PHOTOGRAPH LOG



Photograph 119: Gamma walkover survey on GCP01 in WA 29—September 5, 2012



Photograph 120: Hauling scanned and release concrete debris to stockpile area in WA 24—September 5, 2012

PHOTOGRAPH LOG



Photograph 121: Gamma walk survey in WA 28—September 6, 2012



Photograph 122: Hauling scanned and radiologically released scrap metal to stockpile area in WA 24—September 11, 2012

PHOTOGRAPH LOG



Photograph 123: Scanning rails (from South Pier) near Berth 14—September 13, 2012



Photograph 124: Scanning rails (from South Pier) near Berth 14—September 18, 2012

PHOTOGRAPH LOG



**Photograph 125: Placing rails (from Gun Mole Pier) for radiological scanning in WA 25—
September 18, 2012**



Photograph 126: Removing lids from SEC01 to collect samples—September 24, 2012

PHOTOGRAPH LOG



Photograph 127: Scanning rails (from Gun Mole Pier) in WA 25—September 26, 2012



Photograph 128: Stockpiling scanned rails at WA 25—September 27, 2012

PHOTOGRAPH LOG



Photograph 129: Loading out LLRW bins—October 1, 2012



Photograph 130: Consolidating asphalt piles at Berth 14—October 1, 2012

PHOTOGRAPH LOG



Photograph 131: Asphalt crushing at Berth 14—October 8, 2012



Photograph 132: Gamma walkover survey at Gun Mole Pier—October 15, 2012

PHOTOGRAPH LOG



Photograph 133: Radiological scanning at South Pier (SEC01)—October 15, 2012



Photograph 134: Asphalt crushing operation at WA 25—October 16, 2012

PHOTOGRAPH LOG



**Photograph 135: Loading out scanned and radiologically released metal scrap pile at Berth 14—
October 18, 2012**



Photograph 136: Asphalt crushing operation at WA 25—October 18, 2012

PHOTOGRAPH LOG



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Photograph 137: Loading crushed asphalt for backfill at South Pier—October 23, 2012



Photograph 138: Placing crushed asphalt at South Pier, facing south—October 23, 2012

PHOTOGRAPH LOG



Photograph 139: Placing crushed asphalt at Gun Mole Pier, facing west—October 24, 2012



Photograph 140: Placing crushed asphalt at Gun Mole Pier, facing east—October 30, 2012

PHOTOGRAPH LOG



Photograph 141: Compacting asphalt at Gun Mole Pier—November 5, 2012



Photograph 142: Placing and compacting asphalt at Gun Mole Pier—November 12, 2012

PHOTOGRAPH LOG



Photograph 143: Remaining South Pier wood ties stockpile at Berth 14—November 15, 2012



Photograph 144: Remaining Gun Mole Pier wood ties stockpile at WA 25—November 15, 2012

PHOTOGRAPH LOG



Photograph 145: South Pier, facing southeast—November 15, 2012



Photograph 146: South Pier, facing west—November 15, 2012

PHOTOGRAPH LOG



Photograph 147: Gun Mole Pier, facing northwest—November 15, 2012



Photograph 148: Gun Mole Pier, facing southeast—November 15, 2012

Appendix G
Data Validation Packages
(provided on electronic copy only)

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1C080460
SAMPLING DATE(S): January 29, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-003-010	F1C080460-001	Soil	X
06-PD1-SP-003-014	F1C080460-002	Soil	X
06-PD1-SP-004-003	F1C080460-003	Soil	X
06-PD1-SP-004-009	F1C080460-004	Soil	X
06-PD1-SP-006-002	F1C080460-007	Soil	X
06-PD1-SP-006-008	F1C080460-008	Soil	X
06-PD1-SP-007-006	F1C080460-009	Soil	X
06-PD1-SP-007-017	F1C080460-010	Soil	X
06-PD1-SP-001-006	F1C080460-011	Soil	X
06-PD1-SP-001-008	F1C080460-012	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1C080460 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1C080000-286B for the following analyte:

<u>Analyte</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Total Strontium	0.151 pCi/g	0.102 pCi/g	2.95

All associated sample results for Total Strontium were non-detected; therefore, no data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-003-010 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1C080460

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: October 23, 2012

SDG NUMBER: F1C210453
SAMPLING DATE(S): March 04, 2011 - March 05, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-017-011	F1C210453-016	Soil	X
06-PD1-GMP-017-018	F1C210453-017	Soil	X
06-PD1-GMP-019-003	F1C210453-018	Soil	X
06-PD1-GMP-019-012	F1C210453-019	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1C210453 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-001-009 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1C210453

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1C210453
SAMPLING DATE(S): February 23, 2011 - February 25, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-002-010	F1C210453-004	Soil	X
06-PD1-GMP-002-017	F1C210453-005	Soil	X
06-PD1-GMP-006-006	F1C210453-006	Soil	X
06-PD1-GMP-003-018	F1C210453-007	Soil	X
06-PD1-GMP-004-005	F1C210453-008	Soil	X
06-PD1-GMP-004-015	F1C210453-009	Soil	X
06-PD1-GMP-005-007	F1C210453-010	Soil	X
06-PD1-GMP-005-008	F1C210453-011	Soil	X
06-PD1-GMP-006-002	F1C210453-012	Soil	X
06-PD1-GMP-006-017	F1C210453-013	Soil	X
06-PD1-GMP-007-005	F1C210453-014	Soil	X
06-PD1-GMP-007-015	F1C210453-015	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1C210453 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-002-010 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1C210453

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: September 01, 2012

SDG NUMBER: F1C210460
SAMPLING DATES: February 15, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1T-263-002	F1C210460-007	Soil	X
06-PD1T-263-003	F1C210460-008	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1C210460 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-D24-003-009 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1C300465
SAMPLING DATE(S): January 29, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-001-011	F1C300465-003	Soil	X
06-PD1-SP-001-014	F1C300465-004	Soil	X
06-PD1-SP-008-008	F1C300465-007	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1C300465 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-008-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1C300465

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F1C300468
SAMPLING DATE(S): March 05, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-028-011	F1C300468-004	Soil	X
06-PD1-GMP-028-016	F1C300468-005	Soil	X
06-PD1-GMP-028-021	F1C300468-006	Soil	X
06-PD1-GMP-029-001	F1C300468-007	Soil	X
06-PD1-GMP-029-010	F1C300468-008	Soil	X
06-PD1-GMP-029-021	F1C300468-009	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1C300468 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-008-022 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1C300468

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1D070486
SAMPLING DATES: March 23, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1T-258-018	F1D070486-010	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D070486 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1D070404-001 of SDG F1D070404. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 07, 2012

SDG NUMBER: F1D140499
SAMPLING DATE(S): March 29, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-027-002	F1D140499-012	Soil	X
06-PD1-GMP-027-009	F1D140499-013	Soil	X
06-PD1-GMP-027-012	F1D140499-014	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D140499 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-027-002 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1D140499

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1D150474
SAMPLING DATE(S): January 29, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-003-016	F1D150474-001	Soil	X
06-PD1-SP-003-017	F1D150474-002	Soil	X
06-PD1-SP-004-011	F1D150474-003	Soil	X
06-PD1-SP-004-018	F1D150474-004	Soil	X
06-PD1-SP-008-004	F1D150474-007	Soil	X
06-PD1-SP-008-010	F1D150474-008	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D150474 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1T-263-001 of SDG F1D150457. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1D150474

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1D150477
SAMPLING DATES: February 15, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1T-263-001	F1D150477-001	Soil	X
06-PD1T-263-016	F1D150477-016	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D150477 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1D150477-001 of SDG F1D150477. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EML SR-03-RC Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Strontium-90)
DATA VALIDATION DATE: September 01, 2012

SDG NUMBER: F1D210499
SAMPLING DATES: March 23, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Sr-90</u>
06-PD1T-258-015	F1D210499-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D210499 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

STRONTIUM-90

SUMMARY

I.) General:

The laboratory has cited analytical method EML SR-03-RC Modified for the Strontium-90 analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1D210455-001 of SDG F1D210455. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Strontium-90 included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Strontium-90 on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1D220533
SAMPLING DATE(S): March 31, 2011 – April 02, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-021-003	F1D220533-016	Soil	X
06-PD1-GMP-021-008	F1D220533-017	Soil	X
06-PD1-GMP-021-018	F1D220533-018	Soil	X
06-PD1-GMP-022-011	F1D220533-019	Soil	X
06-PD1-GMP-022-015	F1D220533-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D220533 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-021-003 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1D220533

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1D220537
SAMPLING DATE(S): March 31, 2011 – April 04, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-022-024	F1D220537-001	Soil	X
06-PD1-GMP-023-007	F1D220537-002	Soil	X
06-PD1-GMP-023-019	F1D220537-003	Soil	X
06-PD1-GMP-023-020	F1D220537-004	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D220537 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-022-024 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1D220537

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1D220546
SAMPLING DATE(S): April 02, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-032-002	F1D220546-004	Soil	X
06-PD1-GMP-032-011	F1D220546-005	Soil	X
06-PD1-GMP-032-020	F1D220546-006	Soil	X
06-PD1-GMP-033-007	F1D220546-007	Soil	X
06-PD1-GMP-033-012	F1D220546-008	Soil	X
06-PD1-GMP-033-020	F1D220546-009	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D220546 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-026-015 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1D220546

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1D220552
SAMPLING DATE(S): April 06, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-061-004	F1D220552-002	Soil	X
06-PD1-GMP-061-018	F1D220552-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D220552 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-060-010 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1D220552

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: August 31, 2012
SDG NUMBER: F1D220554
SAMPLING DATES: April 12, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-269-001	F1D220554-001	Soil	X
06-PD1T-269-002	F1D220554-002	Soil	X
06-PD1T-269-003	F1D220554-003	Soil	X
06-PD1T-269-004	F1D220554-004	Soil	X
06-PD1T-269-005	F1D220554-005	Soil	X
06-PD1T-269-006	F1D220554-006	Soil	X
06-PD1T-269-007	F1D220554-007	Soil	X
06-PD1T-269-008	F1D220554-008	Soil	X
06-PD1T-269-009	F1D220554-009	Soil	X
06-PD1T-269-010	F1D220554-010	Soil	X
06-PD1T-269-011	F1D220554-011	Soil	X
06-PD1T-269-012	F1D220554-012	Soil	X
06-PD1T-269-013	F1D220554-013	Soil	X
06-PD1T-269-014	F1D220554-014	Soil	X
06-PD1T-269-015	F1D220554-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-269-016	F1D220554-016	Soil	X
06-PD1T-269-017	F1D220554-017	Soil	X
06-PD1T-269-018	F1D220554-018	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D220554 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches near secular equilibrium with Radon-222, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1T-269-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-0130
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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1D220558
SAMPLING DATES: April 12, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1T-269-001	F1D220558-001	Soil	X
06-PD1T-269-017	F1D220558-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1D220558 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1D220552-001 of SDG F1D220552. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1E090533
SAMPLING DATE(S): April 02, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-013-020	F1E090533-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E090533 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1E090531-001 of SDG F1E090531. Both Strontium-90 results were non-detected; therefore, precision criterion was not evaluated. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1E090533

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 11, 2012
SDG NUMBER: F1E100590
SAMPLING DATE(S): March 05, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-008-001	F1E100590-001	Soil	X
06-PD1-GMP-008-003	F1E100590-003	Soil	X
06-PD1-GMP-008-005	F1E100590-005	Soil	X
06-PD1-GMP-008-006	F1E100590-006	Soil	X
06-PD1-GMP-008-007	F1E100590-007	Soil	X
06-PD1-GMP-008-008	F1E100590-008	Soil	X
06-PD1-GMP-008-009	F1E100590-009	Soil	X
06-PD1-GMP-008-010	F1E100590-010	Soil	X
06-PD1-GMP-008-011	F1E100590-011	Soil	X
06-PD1-GMP-008-012	F1E100590-012	Soil	X
06-PD1-GMP-008-013	F1E100590-013	Soil	X
06-PD1-GMP-008-014	F1E100590-014	Soil	X
06-PD1-GMP-008-015	F1E100590-015	Soil	X
06-PD1-GMP-008-016	F1E100590-016	Soil	X
06-PD1-GMP-008-017	F1E100590-017	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-008-018	F1E100590-018	Soil	X
06-PD1-GMP-008-019	F1E100590-019	Soil	X
06-PD1-GMP-008-020	F1E100590-020	Soil	X
06-PD1-GMP-008-021	F1E100590-021	Soil	X
06-PD1-GMP-008-022	F1E100590-022	Soil	X
06-PD1-GMP-008-023	F1E100590-023	Soil	X
06-PD1-GMP-008-024	F1E100590-024	Soil	X
06-PD1-GMP-008-025	F1E100590-025	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E100590 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1E110000-326B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.124 pCi/g	0.0878 pCi/g	2.81

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-008-001	2.90	Pass
06-PD1-GMP-008-003	2.41	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-008-005	3.48	Pass
06-PD1-GMP-008-006	1.94	Fail
06-PD1-GMP-008-007	3.68	Pass
06-PD1-GMP-008-008	3.63	Pass
06-PD1-GMP-008-009	2.74	Pass
06-PD1-GMP-008-010	3.06	Pass
06-PD1-GMP-008-011	4.23	Pass
06-PD1-GMP-008-012	2.41	Fail
06-PD1-GMP-008-013	3.64	Pass
06-PD1-GMP-008-014	3.16	Pass
06-PD1-GMP-008-015	4.67	Pass
06-PD1-GMP-008-016	3.66	Pass
06-PD1-GMP-008-017	2.63	Pass
06-PD1-GMP-008-018	3.42	Pass
06-PD1-GMP-008-019	3.54	Pass
06-PD1-GMP-008-020	2.86	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-008-001 and 06-PD1-GMP-008-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1E100590

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-008-003	F1E100590-003	Lead-214	B6	J
06-PD1-GMP-008-006	F1E100590-003	Lead-214	B6	J
06-PD1-GMP-008-012	F1E100590-003	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 22, 2012
SDG NUMBER: F1E100600
SAMPLING DATE(S): March 05, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-019-001	F1E100600-001	Soil	X
06-PD1-GMP-019-002	F1E100600-002	Soil	X
06-PD1-GMP-019-003	F1E100600-003	Soil	X
06-PD1-GMP-019-004	F1E100600-004	Soil	X
06-PD1-GMP-019-005	F1E100600-005	Soil	X
06-PD1-GMP-019-006	F1E100600-006	Soil	X
06-PD1-GMP-019-007	F1E100600-007	Soil	X
06-PD1-GMP-019-008	F1E100600-008	Soil	X
06-PD1-GMP-019-009	F1E100600-009	Soil	X
06-PD1-GMP-019-010	F1E100600-010	Soil	X
06-PD1-GMP-019-011	F1E100600-011	Soil	X
06-PD1-GMP-019-012	F1E100600-012	Soil	X
06-PD1-GMP-019-013	F1E100600-013	Soil	X
06-PD1-GMP-019-014	F1E100600-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-019-015	F1E100600-015	Soil	X
06-PD1-GMP-019-016	F1E100600-016	Soil	X
06-PD1-GMP-019-017	F1E100600-017	Soil	X
06-PD1-GMP-019-018	F1E100600-018	Soil	X
06-PD1-GMP-019-019	F1E100600-019	Soil	X
06-PD1-GMP-019-020	F1E100600-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E100600 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1E110000-327B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.141 pCi/g	0.0717 pCi/g	3.93

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-019-001	2.64	Pass
06-PD1-GMP-019-002	4.86	Pass

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-019-003	3.18	Pass
06-PD1-GMP-019-004	2.52	Fail
06-PD1-GMP-019-005	2.78	Pass
06-PD1-GMP-019-006	2.93	Pass
06-PD1-GMP-019-007	2.66	Pass
06-PD1-GMP-019-008	2.18	Fail
06-PD1-GMP-019-009	2.71	Pass
06-PD1-GMP-019-010	3.61	Pass
06-PD1-GMP-019-011	3.21	Pass
06-PD1-GMP-019-012	3.66	Pass
06-PD1-GMP-019-013	2.60	Pass
06-PD1-GMP-019-014	3.48	Pass
06-PD1-GMP-019-015	4.25	Pass
06-PD1-GMP-019-016	3.17	Pass
06-PD1-GMP-019-017	3.18	Pass
06-PD1-GMP-019-018	3.32	Pass
06-PD1-GMP-019-019	3.21	Pass
06-PD1-GMP-019-020	3.42	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-019-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1E100600

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-019-004	F1E100600-004	Lead-214	B6	J
06-PD1-GMP-019-008	F1E100600-008	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EML SR-03-RC Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Strontium-90)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1E170473
SAMPLING DATE(S): April 02, 2011

SAMPLE(S):

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Sr-90</u>
06-PD1-GMP-13-007	F1E170473-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E170473 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

STRONTIUM-90

SUMMARY

I.) General:

The laboratory has cited analytical method EML SR-03-RC Modified for the Strontium-90 analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-13-007 of this SDG. Both Strontium-90 results were non-detected; therefore, precision criterion was not evaluated. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Strontium-90 included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Strontium-90 on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1E170473

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1E180499
SAMPLING DATES: March 23, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-258-001	F1E180499-001	Soil	X
06-PD1T-258-002	F1E180499-002	Soil	X
06-PD1T-258-003	F1E180499-003	Soil	X
06-PD1T-258-004	F1E180499-004	Soil	X
06-PD1T-258-005	F1E180499-005	Soil	X
06-PD1T-258-006	F1E180499-006	Soil	X
06-PD1T-258-007	F1E180499-007	Soil	X
06-PD1T-258-008	F1E180499-008	Soil	X
06-PD1T-258-009	F1E180499-009	Soil	X
06-PD1T-258-010	F1E180499-010	Soil	X
06-PD1T-258-011	F1E180499-011	Soil	X
06-PD1T-258-012	F1E180499-012	Soil	X
06-PD1T-258-013	F1E180499-013	Soil	X
06-PD1T-258-014	F1E180499-014	Soil	X
06-PD1T-258-015	F1E180499-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-258-016	F1E180499-016	Soil	X
06-PD1T-258-017	F1E180499-017	Soil	X
06-PD1T-258-018	F1E180499-018	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E180499 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches near secular equilibrium with Radon-222, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1E190000-261B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.107 pCi/g	0.0466 pCi/g	4.61

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1T-258-001	2.48	Fail
06-PD1T-258-002	2.53	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1T-258-003	1.76	Fail
06-PD1T-258-004	4.87	Pass
06-PD1T-258-005	2.71	Pass
06-PD1T-258-006	3.18	Pass
06-PD1T-258-007	0.65	Fail
06-PD1T-258-008	1.60	Fail
06-PD1T-258-009	3.16	Pass
06-PD1T-258-010	3.37	Pass
06-PD1T-258-011	3.80	Pass
06-PD1T-258-012	1.41	Fail
06-PD1T-258-013	1.41	Fail
06-PD1T-258-014	2.94	Pass
06-PD1T-258-015	3.24	Pass
06-PD1T-258-016	2.48	Fail
06-PD1T-258-017	3.12	Pass
06-PD1T-258-018	3.16	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1T-258-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1T-258-001	F1E180499-001	Lead -214	B6	J
06-PD1T-258-002	F1E180499-002	Lead -214	B6	J
06-PD1T-258-003	F1E180499-003	Lead -214	B6	J
06-PD1T-258-007	F1E180499-007	Lead -214	B6	J
06-PD1T-258-008	F1E180499-008	Lead -214	B6	J
06-PD1T-258-012	F1E180499-012	Lead -214	B6	J
06-PD1T-258-013	F1E180499-013	Lead -214	B6	J
06-PD1T-258-016	F1E180499-016	Lead -214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1E180508
SAMPLING DATES: February 15, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-263-001	F1E180508-001	Soil	X
06-PD1T-263-002	F1E180508-002	Soil	X
06-PD1T-263-003	F1E180508-003	Soil	X
06-PD1T-263-004	F1E180508-004	Soil	X
06-PD1T-263-005	F1E180508-005	Soil	X
06-PD1T-263-006	F1E180508-006	Soil	X
06-PD1T-263-007	F1E180508-007	Soil	X
06-PD1T-263-008	F1E180508-008	Soil	X
06-PD1T-263-009	F1E180508-009	Soil	X
06-PD1T-263-010	F1E180508-010	Soil	X
06-PD1T-263-011	F1E180508-011	Soil	X
06-PD1T-263-012	F1E180508-012	Soil	X
06-PD1T-263-013	F1E180508-013	Soil	X
06-PD1T-263-014	F1E180508-014	Soil	X
06-PD1T-263-015	F1E180508-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-263-016	F1E180508-016	Soil	X
06-PD1T-263-017	F1E180508-017	Soil	X
06-PD1T-263-018	F1E180508-018	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E180508 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches near secular equilibrium with Radon-222, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1T-263-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1E240404
SAMPLING DATES: April 13, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-268-001	F1E240404-001	Soil	X
06-PD1T-268-002	F1E240404-002	Soil	X
06-PD1T-268-003	F1E240404-003	Soil	X
06-PD1T-268-004	F1E240404-004	Soil	X
06-PD1T-268-005	F1E240404-005	Soil	X
06-PD1T-268-006	F1E240404-006	Soil	X
06-PD1T-268-007	F1E240404-007	Soil	X
06-PD1T-268-008	F1E240404-008	Soil	X
06-PD1T-268-009	F1E240404-009	Soil	X
06-PD1T-268-010	F1E240404-010	Soil	X
06-PD1T-268-011	F1E240404-011	Soil	X
06-PD1T-268-012	F1E240404-012	Soil	X
06-PD1T-268-013	F1E240404-013	Soil	X
06-PD1T-268-014	F1E240404-014	Soil	X
06-PD1T-268-015	F1E240404-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-268-016	F1E240404-016	Soil	X
06-PD1T-268-017	F1E240404-017	Soil	X
06-PD1T-268-018	F1E240404-018	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E240404 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches near secular equilibrium with Radon-222, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1E240000-194B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.113 pCi/g	0.0636 pCi/g	3.55

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1T-268-001	1.33	Fail
06-PD1T-268-002	1.61	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1T-268-003	1.29	Fail
06-PD1T-268-004	1.06	Fail
06-PD1T-268-005	3.36	Pass
06-PD1T-268-006	0.73	Fail
06-PD1T-268-007	0.56	Fail
06-PD1T-268-008	0.75	Fail
06-PD1T-268-009	0.02	Fail
06-PD1T-268-010	0.00	Fail
06-PD1T-268-011	0.03	Fail
06-PD1T-268-012	0.09	Fail
06-PD1T-268-013	3.84	Pass
06-PD1T-268-014	4.83	Pass
06-PD1T-268-015	2.72	Pass
06-PD1T-268-016	4.40	Pass
06-PD1T-268-017	4.53	Pass
06-PD1T-268-018	2.98	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1T-268-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1T-268-001	F1E240404-001	Lead -214	B6	J
06-PD1T-268-002	F1E240404-002	Lead -214	B6	J
06-PD1T-268-003	F1E240404-003	Lead -214	B6	J
06-PD1T-268-004	F1E240404-004	Lead -214	B6	J
06-PD1T-268-006	F1E240404-006	Lead -214	B6	J
06-PD1T-268-007	F1E240404-007	Lead -214	B6	J
06-PD1T-268-008	F1E240404-008	Lead -214	B6	J
06-PD1T-268-009	F1E240404-009	Lead -214	B6	J
06-PD1T-268-010	F1E240404-010	Lead -214	B6	J
06-PD1T-268-011	F1E240404-011	Lead -214	B6	J
06-PD1T-268-012	F1E240404-012	Lead -214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1E240405
SAMPLING DATES: May 05, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-260-101	F1E240405-001	Soil	X
06-PD1T-260-102	F1E240405-002	Soil	X
06-PD1T-260-103	F1E240405-003	Soil	X
06-PD1T-260-104	F1E240405-004	Soil	X
06-PD1T-260-105	F1E240405-005	Soil	X
06-PD1T-260-106	F1E240405-006	Soil	X
06-PD1T-260-107	F1E240405-007	Soil	X
06-PD1T-260-108	F1E240405-008	Soil	X
06-PD1T-260-109	F1E240405-009	Soil	X
06-PD1T-260-110	F1E240405-010	Soil	X
06-PD1T-260-111	F1E240405-011	Soil	X
06-PD1T-260-112	F1E240405-012	Soil	X
06-PD1T-260-113	F1E240405-013	Soil	X
06-PD1T-260-114	F1E240405-014	Soil	X
06-PD1T-260-115	F1E240405-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1T-260-116	F1E240405-016	Soil	X
06-PD1T-260-117	F1E240405-017	Soil	X
06-PD1T-260-118	F1E240405-018	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E240405 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches near secular equilibrium with Radon-222, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1T-260-101 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: September 01, 2012
SDG NUMBER: F1E240416
SAMPLING DATES: April 13, 2011 – May 05, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1T-260-107	F1E240416-005	Soil	X
06-PD1T-260-109	F1E240416-006	Soil	X
06-PD1T-260-113	F1E240416-007	Soil	X
06-PD1T-268-005	F1E240416-008	Soil	X
06-PD1T-268-018	F1E240416-009	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E240416 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1T-253-101 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1E310451
SAMPLING DATE(S): January 29, 2011 - January 31, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-001-001	F1E310451-001	Soil	X
06-PD1-SP-001-002	F1E310451-002	Soil	X
06-PD1-SP-001-003	F1E310451-003	Soil	X
06-PD1-SP-001-004	F1E310451-004	Soil	X
06-PD1-SP-001-005	F1E310451-005	Soil	X
06-PD1-SP-001-006	F1E310451-006	Soil	X
06-PD1-SP-001-007	F1E310451-007	Soil	X
06-PD1-SP-001-008	F1E310451-008	Soil	X
06-PD1-SP-001-009	F1E310451-009	Soil	X
06-PD1-SP-001-010	F1E310451-010	Soil	X
06-PD1-SP-001-011	F1E310451-011	Soil	X
06-PD1-SP-001-012	F1E310451-012	Soil	X
06-PD1-SP-001-013	F1E310451-013	Soil	X
06-PD1-SP-001-014	F1E310451-014	Soil	X
06-PD1-SP-001-015	F1E310451-015	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-001-016	F1E310451-016	Soil	X
06-PD1-SP-001-017	F1E310451-017	Soil	X
06-PD1-SP-001-018	F1E310451-018	Soil	X
06-PD1-SP-001-019	F1E310451-019	Soil	X
06-PD1-SP-001-020	F1E310451-020	Soil	X
06-PD1-SP-001-021	F1E310451-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E310451 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-001-001 of this SDG and sample 06-PD1-SP-006-001 of SDG F1E310452. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1E310451

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1E310452
SAMPLING DATE(S): January 29, 2011 - January 31, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-006-001	F1E310452-001	Soil	X
06-PD1-SP-006-002	F1E310452-002	Soil	X
06-PD1-SP-006-003	F1E310452-003	Soil	X
06-PD1-SP-006-004	F1E310452-004	Soil	X
06-PD1-SP-006-005	F1E310452-005	Soil	X
06-PD1-SP-006-006	F1E310452-006	Soil	X
06-PD1-SP-006-007	F1E310452-007	Soil	X
06-PD1-SP-006-008	F1E310452-008	Soil	X
06-PD1-SP-006-009	F1E310452-009	Soil	X
06-PD1-SP-006-010	F1E310452-010	Soil	X
06-PD1-SP-006-011	F1E310452-011	Soil	X
06-PD1-SP-006-012	F1E310452-012	Soil	X
06-PD1-SP-006-013	F1E310452-013	Soil	X
06-PD1-SP-006-014	F1E310452-014	Soil	X
06-PD1-SP-006-015	F1E310452-015	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-006-016	F1E310452-016	Soil	X
06-PD1-SP-006-017	F1E310452-017	Soil	X
06-PD1-SP-006-018	F1E310452-018	Soil	X
06-PD1-SP-006-019	F1E310452-019	Soil	X
06-PD1-SP-006-020	F1E310452-020	Soil	X
06-PD1-SP-006-021	F1E310452-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E310452 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-SP-006-001 and 06-PD1-SP-006-020 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1E310452

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1E310453
SAMPLING DATE(S): January 29, 2011 - January 31, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-004-001	F1E310453-001	Soil	X
06-PD1-SP-004-002	F1E310453-002	Soil	X
06-PD1-SP-004-003	F1E310453-003	Soil	X
06-PD1-SP-004-004	F1E310453-004	Soil	X
06-PD1-SP-004-005	F1E310453-005	Soil	X
06-PD1-SP-004-006	F1E310453-006	Soil	X
06-PD1-SP-004-007	F1E310453-007	Soil	X
06-PD1-SP-004-008	F1E310453-008	Soil	X
06-PD1-SP-004-009	F1E310453-009	Soil	X
06-PD1-SP-004-010	F1E310453-010	Soil	X
06-PD1-SP-004-011	F1E310453-011	Soil	X
06-PD1-SP-004-012	F1E310453-012	Soil	X
06-PD1-SP-004-013	F1E310453-013	Soil	X
06-PD1-SP-004-014	F1E310453-014	Soil	X
06-PD1-SP-004-015	F1E310453-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-004-016	F1E310453-016	Soil	X
06-PD1-SP-004-017	F1E310453-017	Soil	X
06-PD1-SP-004-018	F1E310453-018	Soil	X
06-PD1-SP-004-019	F1E310453-019	Soil	X
06-PD1-SP-004-020	F1E310453-020	Soil	X
06-PD1-SP-004-021	F1E310453-021	Soil	X
06-PD1-SP-004-022	F1E310453-022	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1E310453 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements for method blank F1F010000-048B. No data qualification was necessary.

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1F010000-051B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.138 pCi/g	0.0564 pCi/g	4.91

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated detected samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-SP-004-019	2.06	Fail
06-PD1-SP-004-020	2.94	Pass
06-PD1-SP-004-021	3.21	Pass
06-PD1-SP-004-022	2.44	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-SP-006-020 of SDG F1E310452 and 06-PD1-SP-004-019 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1E310453

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-SP-004-019	F1E310453-019	Lead-214	B6	J
06-PD1-SP-004-022	F1E310453-022	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1F220481
SAMPLING DATE(S): May 17, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-05-110	F1F220481-001	Soil	X
06-PD1-SP-05-114	F1F220481-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1F220481 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

The LCS recovery exceeded the laboratory QC limits in LCS F1F230000-013C, indicating a potential positive bias for the analyte.

<u>Analyte</u>	<u>LCS Recovery</u>	<u>QC Limits</u>
Total Strontium	114%	68-104%

All associated sample results for Total Strontium were non-detected and less than the RL; therefore, no data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1F220476-001 of SDG F1F220476. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1F220481

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1F220482
SAMPLING DATE(S): May 17, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-05-101	F1F220482-001	Soil	X
06-PD1-SP-05-102	F1F220482-002	Soil	X
06-PD1-SP-05-103	F1F220482-003	Soil	X
06-PD1-SP-05-104	F1F220482-004	Soil	X
06-PD1-SP-05-105	F1F220482-005	Soil	X
06-PD1-SP-05-106	F1F220482-006	Soil	X
06-PD1-SP-05-107	F1F220482-007	Soil	X
06-PD1-SP-05-108	F1F220482-008	Soil	X
06-PD1-SP-05-109	F1F220482-009	Soil	X
06-PD1-SP-05-110	F1F220482-010	Soil	X
06-PD1-SP-05-111	F1F220482-011	Soil	X
06-PD1-SP-05-112	F1F220482-012	Soil	X
06-PD1-SP-05-113	F1F220482-013	Soil	X
06-PD1-SP-05-114	F1F220482-014	Soil	X
06-PD1-SP-05-115	F1F220482-015	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-05-116	F1F220482-016	Soil	X
06-PD1-SP-05-117	F1F220482-017	Soil	X
06-PD1-SP-05-118	F1F220482-018	Soil	X
06-PD1-SP-05-119	F1F220482-019	Soil	X
06-PD1-SP-05-120	F1F220482-020	Soil	X
06-PD1-SP-05-121	F1F220482-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1F220482 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements for method blank F1F230000-066B. No data qualification was necessary.

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1F230000-064B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.202 pCi/g	0.0801 pCi/g	5.04

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated detected samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-SP-05-101	3.03	Pass
06-PD1-SP-05-102	2.88	Pass
06-PD1-SP-05-103	2.78	Pass
06-PD1-SP-05-104	2.73	Pass
06-PD1-SP-05-105	3.83	Pass
06-PD1-SP-05-106	2.82	Pass
06-PD1-SP-05-107	3.17	Pass
06-PD1-SP-05-108	4.67	Pass
06-PD1-SP-05-109	3.49	Pass
06-PD1-SP-05-110	2.35	Fail
06-PD1-SP-05-111	2.71	Pass
06-PD1-SP-05-112	3.72	Pass
06-PD1-SP-05-113	3.18	Pass
06-PD1-SP-05-114	3.53	Pass
06-PD1-SP-05-115	0.08	Fail
06-PD1-SP-05-116	4.08	Pass
06-PD1-SP-05-117	3.34	Pass
06-PD1-SP-05-118	2.02	Fail
06-PD1-SP-05-119	3.95	Pass
06-PD1-SP-05-120	3.46	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-SP-05-101 and 06-PD1-SP-05-121 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1F220482

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-SP-05-110	F1F220482-010	Lead-214	B6	J
06-PD1-SP-05-115	F1F220482-015	Lead-214	B6	J
06-PD1-SP-05-118	F1F220482-018	Lead-214	B6	J

VALIDATA

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1G200478
SAMPLING DATE(S): January 29, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-003-001	F1G200478-001	Soil	X
06-PD1-SP-003-002	F1G200478-002	Soil	X
06-PD1-SP-003-003	F1G200478-003	Soil	X
06-PD1-SP-003-004	F1G200478-004	Soil	X
06-PD1-SP-003-005	F1G200478-005	Soil	X
06-PD1-SP-003-006	F1G200478-006	Soil	X
06-PD1-SP-003-007	F1G200478-007	Soil	X
06-PD1-SP-003-008	F1G200478-008	Soil	X
06-PD1-SP-003-009	F1G200478-009	Soil	X
06-PD1-SP-003-010	F1G200478-010	Soil	X
06-PD1-SP-003-011	F1G200478-011	Soil	X
06-PD1-SP-003-012	F1G200478-012	Soil	X
06-PD1-SP-003-013	F1G200478-013	Soil	X
06-PD1-SP-003-014	F1G200478-014	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-003-015	F1G200478-015	Soil	X
06-PD1-SP-003-016	F1G200478-016	Soil	X
06-PD1-SP-003-017	F1G200478-017	Soil	X
06-PD1-SP-003-018	F1G200478-018	Soil	X
06-PD1-SP-003-019	F1G200478-019	Soil	X
06-PD1-SP-003-020	F1G200478-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G200478 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-003-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G200478

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1G200479
SAMPLING DATE(S): January 31, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-033-021	F1G200479-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G200479 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1G270000-128B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0899 pCi/g	0.0627 pCi/g	2.87

Z_{DER} was calculated to determine the relative difference of the sample analyte result with the failed blank analyte result. The associated detected sample with a $Z_{DER} < 2.58$ is potentially biased high and was qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-SP-003-021	1.95	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-003-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G200479

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-SP-003-021	F1G200479-001	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1G200491
SAMPLING DATE(S): January 29, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-008-001	F1G200491-001	Soil	X
06-PD1-SP-008-002	F1G200491-002	Soil	X
06-PD1-SP-008-003	F1G200491-003	Soil	X
06-PD1-SP-008-004	F1G200491-004	Soil	X
06-PD1-SP-008-005	F1G200491-005	Soil	X
06-PD1-SP-008-006	F1G200491-006	Soil	X
06-PD1-SP-008-007	F1G200491-007	Soil	X
06-PD1-SP-008-008	F1G200491-008	Soil	X
06-PD1-SP-008-009	F1G200491-009	Soil	X
06-PD1-SP-008-010	F1G200491-010	Soil	X
06-PD1-SP-008-011	F1G200491-011	Soil	X
06-PD1-SP-008-012	F1G200491-012	Soil	X
06-PD1-SP-008-013	F1G200491-013	Soil	X
06-PD1-SP-008-014	F1G200491-014	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-008-015	F1G200491-05	Soil	X
06-PD1-SP-008-016	F1G200491-016	Soil	X
06-PD1-SP-008-017	F1G200491-017	Soil	X
06-PD1-SP-008-018	F1G200491-018	Soil	X
06-PD1-SP-008-019	F1G200491-019	Soil	X
06-PD1-SP-008-020	F1G200491-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G200491 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-008-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G200491

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1G220451
SAMPLING DATE(S): May 06, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-012-101	F1G220451-001	Soil	X
06-PD1-SP-012-102	F1G220451-002	Soil	X
06-PD1-SP-012-103	F1G220451-003	Soil	X
06-PD1-SP-012-104	F1G220451-004	Soil	X
06-PD1-SP-012-105	F1G220451-005	Soil	X
06-PD1-SP-012-1067	F1G220451-006	Soil	X
06-PD1-SP-012-108	F1G220451-007	Soil	X
06-PD1-SP-012-109	F1G220451-008	Soil	X
06-PD1-SP-012-110	F1G220451-009	Soil	X
06-PD1-SP-012-111	F1G220451-010	Soil	X
06-PD1-SP-012-112	F1G220451-011	Soil	X
06-PD1-SP-012-113	F1G220451-012	Soil	X
06-PD1-SP-012-114	F1G220451-013	Soil	X
06-PD1-SP-012-115	F1G220451-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-012-116	F1G220451-015	Soil	X
06-PD1-SP-012-117	F1G220451-016	Soil	X
06-PD1-SP-012-118	F1G220451-017	Soil	X
06-PD1-SP-012-119	F1G220451-018	Soil	X
06-PD1-SP-012-120	F1G220451-019	Soil	X
06-PD1-SP-012-121	F1G220451-020	Soil	X
06-PD1-SP-012-122	F1G220451-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G220451 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements for method blank F1G270000-124B. No data qualification was necessary.

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1G270000-128B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0899 pCi/g	0.0627 pCi/g	2.87

Z_{DER} was calculated to determine the relative difference of the sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample was demonstrated to be significantly different ($Z_{DER} > 2.58$) and did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-SP-012-121	3.19	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-012-101 of this SDG and sample 06-PD1-SP-003-021 of SDG F1G200479. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G220451

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1G220454
SAMPLING DATE(S): June 10, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-011-201	F1G220454-001	Soil	X
06-PD1-SP-011-202	F1G220454-002	Soil	X
06-PD1-SP-011-203	F1G220454-003	Soil	X
06-PD1-SP-011-204	F1G220454-004	Soil	X
06-PD1-SP-011-205	F1G220454-005	Soil	X
06-PD1-SP-011-206	F1G220454-006	Soil	X
06-PD1-SP-011-207	F1G220454-007	Soil	X
06-PD1-SP-011-208	F1G220454-008	Soil	X
06-PD1-SP-011-209	F1G220454-009	Soil	X
06-PD1-SP-011-210	F1G220454-010	Soil	X
06-PD1-SP-011-211	F1G220454-011	Soil	X
06-PD1-SP-011-212	F1G220454-012	Soil	X
06-PD1-SP-011-213	F1G220454-013	Soil	X
06-PD1-SP-011-214	F1G220454-014	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-011-215	F1G220454-015	Soil	X
06-PD1-SP-011-216	F1G220454-016	Soil	X
06-PD1-SP-011-217	F1G220454-017	Soil	X
06-PD1-SP-011-218	F1G220454-018	Soil	X
06-PD1-SP-011-219	F1G220454-019	Soil	X
06-PD1-SP-011-220	F1G220454-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G220454 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-011-201 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G220454

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1G220456
SAMPLING DATE(S): March 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-009-021	F1G220456-001	Soil	X
06-PD1-SP-009-022	F1G220456-002	Soil	X
06-PD1-SP-009-023	F1G220456-003	Soil	X
06-PD1-SP-009-024	F1G220456-004	Soil	X
06-PD1-SP-009-025	F1G220456-005	Soil	X
06-PD1-SP-009-026	F1G220456-006	Soil	X
06-PD1-SP-009-027	F1G220456-007	Soil	X
06-PD1-SP-009-028	F1G220456-008	Soil	X
06-PD1-SP-009-029	F1G220456-009	Soil	X
06-PD1-SP-009-030	F1G220456-010	Soil	X
06-PD1-SP-009-031	F1G220456-011	Soil	X
06-PD1-SP-009-032	F1G220456-012	Soil	X
06-PD1-SP-009-033	F1G220456-013	Soil	X
06-PD1-SP-009-034	F1G220456-014	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-009-035	F1G220456-015	Soil	X
06-PD1-SP-009-036	F1G220456-016	Soil	X
06-PD1-SP-009-037	F1G220456-017	Soil	X
06-PD1-SP-009-038	F1G220456-018	Soil	X
06-PD1-SP-009-039	F1G220456-019	Soil	X
06-PD1-SP-009-040	F1G220456-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G220456 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-009-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G220456

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1G220466
SAMPLING DATE(S): January 29, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-007-001	F1G220466-001	Soil	X
06-PD1-SP-007-002	F1G220466-002	Soil	X
06-PD1-SP-007-003	F1G220466-003	Soil	X
06-PD1-SP-007-004	F1G220466-004	Soil	X
06-PD1-SP-007-005	F1G220466-005	Soil	X
06-PD1-SP-007-006	F1G220466-006	Soil	X
06-PD1-SP-007-007	F1G220466-007	Soil	X
06-PD1-SP-007-008	F1G220466-008	Soil	X
06-PD1-SP-007-009	F1G220466-009	Soil	X
06-PD1-SP-007-010	F1G220466-010	Soil	X
06-PD1-SP-007-011	F1G220466-011	Soil	X
06-PD1-SP-007-012	F1G220466-012	Soil	X
06-PD1-SP-007-013	F1G220466-013	Soil	X
06-PD1-SP-007-014	F1G220466-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-007-015	F1G220466-015	Soil	X
06-PD1-SP-007-016	F1G220466-016	Soil	X
06-PD1-SP-007-017	F1G220466-017	Soil	X
06-PD1-SP-007-018	F1G220466-018	Soil	X
06-PD1-SP-007-019	F1G220466-019	Soil	X
06-PD1-SP-007-020	F1G220466-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G220466 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-007-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G220466

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1G220475
SAMPLING DATE(S): March 16, 2011 – June 10, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-009-025	F1G220475-001	Soil	X
06-PD1-SP-009-028	F1G220475-002	Soil	X
06-PD1-SP-009-031	F1G220475-003	Soil	X
06-PD1-SP-011-204	F1G220475-004	Soil	X
06-PD1-SP-011-210	F1G220475-005	Soil	X
06-PD1-SP-011-211	F1G220475-006	Soil	X
06-PD1-SP-012-109	F1G220475-007	Soil	X
06-PD1-SP-012-117	F1G220475-008	Soil	X
06-PD1-SP-009-035	F1G220475-009	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G220475 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1G200502-001 of SDG F1G200502. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G220475

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1G280416
SAMPLING DATE(S): January 29, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-003-011	F1G280416-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1G280416 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1G280409-001 of SDG F1G280409. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1G280416

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 31, 2012
SDG NUMBER: F1H230462
SAMPLING DATE(S): June 13, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-013-101	F1H230462-001	Soil	X
06-PD1-SP-013-102	F1H230462-002	Soil	X
06-PD1-SP-013-103	F1H230462-003	Soil	X
06-PD1-SP-013-104	F1H230462-004	Soil	X
06-PD1-SP-013-105	F1H230462-005	Soil	X
06-PD1-SP-013-106	F1H230462-006	Soil	X
06-PD1-SP-013-107	F1H230462-007	Soil	X
06-PD1-SP-013-108	F1H230462-008	Soil	X
06-PD1-SP-013-109	F1H230462-009	Soil	X
06-PD1-SP-013-110	F1H230462-010	Soil	X
06-PD1-SP-013-111	F1H230462-011	Soil	X
06-PD1-SP-013-112	F1H230462-012	Soil	X
06-PD1-SP-013-113	F1H230462-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-013-114	F1H230462-014	Soil	X
06-PD1-SP-013-115	F1H230462-015	Soil	X
06-PD1-SP-013-116	F1H230462-016	Soil	X
06-PD1-SP-013-117	F1H230462-017	Soil	X
06-PD1-SP-013-118	F1H230462-018	Soil	X
06-PD1-SP-013-119	F1H230462-019	Soil	X
06-PD1-SP-013-120	F1H230462-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1H230462 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All data was rejected for sample 06-PD1-SP-013-106. See the MAJOR ISSUES section below for details.

All other laboratory data were acceptable without qualification.

MAJOR ISSUES

The laboratory results for client sample 06-PD1-SP-013-106 were calculated using a sample aliquant of 3535 grams. This weight is approximately 10x the capacity of the “tuna can” geometry. This apparent transcription error has caused all sample results to be biased low by a factor of 10. For this reason the Radium-226, Bismuth-214, Lead-214, Lead-210, and Cesium-137 results for this sample were assigned a validation qualifier as rejected (R).

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-013-101 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1H230462

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-SP-013-106	F1H230462-006	Radium-226	P	R
		Bismuth-214	P	R
		Lead-214	P	R
		Lead-210	P	R
		Cesium-137	P	R

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 01, 2012

SDG NUMBER: F1H230465
SAMPLING DATE(S): June 13, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-013-121	F1H230465-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1H230465 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1H220435-001 of SDG F1H220435. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1H230465

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012

SDG NUMBER: F1H240484
SAMPLING DATE(S): June 13, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-013-106	F1H240484-001	Soil	X
06-PD1-SP-013-117	F1H240484-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1H240484 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1H240482-001 of SDG F1H240482. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1H240484

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1H240508
SAMPLING DATE(S): March 05, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-008-002	F1H240508-002	Soil	X
06-PD1-GMP-008-004	F1H240508-004	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1H240508 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1H220435-001 of SDG F1H220435. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1H240508

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1H310440
SAMPLING DATE(S): March 05, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-029-001	F1H310440-001	Soil	X
06-PD1-GMP-029-002	F1H310440-002	Soil	X
06-PD1-GMP-029-003	F1H310440-003	Soil	X
06-PD1-GMP-029-004	F1H310440-004	Soil	X
06-PD1-GMP-029-005	F1H310440-005	Soil	X
06-PD1-GMP-029-006	F1H310440-006	Soil	X
06-PD1-GMP-029-007	F1H310440-007	Soil	X
06-PD1-GMP-029-008	F1H310440-008	Soil	X
06-PD1-GMP-029-009	F1H310440-009	Soil	X
06-PD1-GMP-029-010	F1H310440-010	Soil	X
06-PD1-GMP-029-011	F1H310440-011	Soil	X
06-PD1-GMP-029-012	F1H310440-012	Soil	X
06-PD1-GMP-029-013	F1H310440-013	Soil	X
06-PD1-GMP-029-014	F1H310440-014	Soil	X
06-PD1-GMP-029-015	F1H310440-015	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-GMP-029-016	F1H310440-016	Soil	X
06-PD1-GMP-029-017	F1H310440-017	Soil	X
06-PD1-GMP-029-018	F1H310440-018	Soil	X
06-PD1-GMP-029-019	F1H310440-019	Soil	X
06-PD1-GMP-029-020	F1H310440-020	Soil	X
06-PD1-GMP-029-021	F1H310440-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1H310440 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 1-10 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-029-001 and 06-PD1-GMP-029-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1H310440

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1I060426
SAMPLING DATE(S): January 29, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-007-006	F1I060426-001	Soil	X
06-PD1-SP-007-016	F1I060426-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1I060426 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1I060424-001 of SDG F1I060424. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1I060426

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1I080459
SAMPLING DATE(S): August 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-10-301	F1I080459-001	Soil	X
06-PD1-SP-10-302	F1I080459-002	Soil	X
06-PD1-SP-10-303	F1I080459-003	Soil	X
06-PD1-SP-10-304	F1I080459-004	Soil	X
06-PD1-SP-10-305	F1I080459-005	Soil	X
06-PD1-SP-10-306	F1I080459-006	Soil	X
06-PD1-SP-10-307	F1I080459-007	Soil	X
06-PD1-SP-10-308	F1I080459-008	Soil	X
06-PD1-SP-10-309	F1I080459-009	Soil	X
06-PD1-SP-10-310	F1I080459-010	Soil	X
06-PD1-SP-10-311	F1I080459-011	Soil	X
06-PD1-SP-10-312	F1I080459-012	Soil	X
06-PD1-SP-10-313	F1I080459-013	Soil	X
06-PD1-SP-10-314	F1I080459-014	Soil	X
06-PD1-SP-10-315	F1I080459-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-10-316	F1I080459-016	Soil	X
06-PD1-SP-10-317	F1I080459-017	Soil	X
06-PD1-SP-10-318	F1I080459-018	Soil	X
06-PD1-SP-10-319	F1I080459-019	Soil	X
06-PD1-SP-10-320	F1I080459-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1I080459 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-10-301 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1I080459

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F1I080462
SAMPLING DATE(S): August 25, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-10-301	F1I080462-001	Soil	X
06-PD1-SP-10-305	F1I080462-002	Soil	X
06-PD1-SP-10-306	F1I080462-003	Soil	X
06-PD1-SP-10-310	F1I080462-004	Soil	X
06-PD1-SP-10-312	F1I080462-005	Soil	X
06-PD1-SP-10-313	F1I080462-006	Soil	X
06-PD1-SP-10-318	F1I080462-007	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1I080462 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-10-301 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1I080462

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1I260431
SAMPLING DATE(S): April 19, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-053-001	F1I260431-001	Soil	X
06-PD1-GMP-053-002	F1I260431-002	Soil	X
06-PD1-GMP-053-003	F1I260431-003	Soil	X
06-PD1-GMP-053-004	F1I260431-004	Soil	X
06-PD1-GMP-053-005	F1I260431-005	Soil	X
06-PD1-GMP-053-006	F1I260431-006	Soil	X
06-PD1-GMP-053-007	F1I260431-007	Soil	X
06-PD1-GMP-053-008	F1I260431-008	Soil	X
06-PD1-GMP-053-009	F1I260431-009	Soil	X
06-PD1-GMP-053-010	F1I260431-010	Soil	X
06-PD1-GMP-053-011	F1I260431-011	Soil	X
06-PD1-GMP-053-012	F1I260431-012	Soil	X
06-PD1-GMP-053-013	F1I260431-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-053-014	F1I260431-014	Soil	X
06-PD1-GMP-053-015	F1I260431-015	Soil	X
06-PD1-GMP-053-016	F1I260431-016	Soil	X
06-PD1-GMP-053-017	F1I260431-017	Soil	X
06-PD1-GMP-053-018	F1I260431-018	Soil	X
06-PD1-GMP-053-019	F1I260431-019	Soil	X
06-PD1-GMP-053-020	F1I260431-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1I260431 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 2 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F11270000-198B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0773 pCi/g	0.0523 pCi/g	2.96

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-053-001	3.68	Pass
06-PD1-GMP-053-002	2.74	Pass
06-PD1-GMP-053-003	3.89	Pass
06-PD1-GMP-053-004	2.32	Fail
06-PD1-GMP-053-005	3.14	Pass
06-PD1-GMP-053-006	2.48	Fail
06-PD1-GMP-053-007	1.92	Fail
06-PD1-GMP-053-008	3.05	Pass
06-PD1-GMP-053-009	1.61	Fail
06-PD1-GMP-053-010	0.17	Fail
06-PD1-GMP-053-011	2.62	Pass
06-PD1-GMP-053-012	2.99	Pass
06-PD1-GMP-053-013	3.46	Pass
06-PD1-GMP-053-014	1.83	Fail
06-PD1-GMP-053-015	1.86	Fail
06-PD1-GMP-053-016	2.32	Fail
06-PD1-GMP-053-017	2.57	Fail
06-PD1-GMP-053-018	1.63	Fail
06-PD1-GMP-053-019	2.03	Fail
06-PD1-GMP-053-020	2.13	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-053-005 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1I260431

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-053-004	F1I260431-004	Lead-214	B6	J
06-PD1-GMP-053-006	F1I260431-006	Lead-214	B6	J
06-PD1-GMP-053-007	F1I260431-007	Lead-214	B6	J
06-PD1-GMP-053-009	F1I260431-009	Lead-214	B6	J
06-PD1-GMP-053-010	F1I260431-010	Lead-214	B6	J
06-PD1-GMP-053-014	F1I260431-014	Lead-214	B6	J
06-PD1-GMP-053-015	F1I260431-015	Lead-214	B6	J
06-PD1-GMP-053-016	F1I260431-016	Lead-214	B6	J
06-PD1-GMP-053-017	F1I260431-017	Lead-214	B6	J
06-PD1-GMP-053-018	F1I260431-018	Lead-214	B6	J
06-PD1-GMP-053-019	F1I260431-019	Lead-214	B6	J
06-PD1-GMP-053-020	F1I260431-020	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F11260433
SAMPLING DATE(S): April 19, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-053-007	F11260433-001	Soil	X
06-PD1-GMP-053-015	F11260433-002	Soil	X
06-PD1-GMP-053-019	F11260433-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1I260433 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 17 days. Due to the relatively long half-lives of the analytes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-053-007 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F11260433

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J190418
SAMPLING DATE(S): February 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-006-001	F1J190418-001	Soil	X
06-PD1-GMP-006-002	F1J190418-002	Soil	X
06-PD1-GMP-006-003	F1J190418-003	Soil	X
06-PD1-GMP-006-004	F1J190418-004	Soil	X
06-PD1-GMP-006-005	F1J190418-005	Soil	X
06-PD1-GMP-006-006	F1J190418-006	Soil	X
06-PD1-GMP-006-007	F1J190418-007	Soil	X
06-PD1-GMP-006-008	F1J190418-008	Soil	X
06-PD1-GMP-006-009	F1J190418-009	Soil	X
06-PD1-GMP-006-010	F1J190418-010	Soil	X
06-PD1-GMP-006-011	F1J190418-011	Soil	X
06-PD1-GMP-006-012	F1J190418-012	Soil	X
06-PD1-GMP-006-013	F1J190418-013	Soil	X
06-PD1-GMP-006-014	F1J190418-014	Soil	X
06-PD1-GMP-006-015	F1J190418-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-006-016	F1J190418-016	Soil	X
06-PD1-GMP-006-017	F1J190418-017	Soil	X
06-PD1-GMP-006-018	F1J190418-018	Soil	X
06-PD1-GMP-006-019	F1J190418-019	Soil	X
06-PD1-GMP-006-020	F1J190418-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190418 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 61-73 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J250000-102B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.159 pCi/g	0.0748 pCi/g	4.26

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} \leq 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-006-001	3.84	Pass
06-PD1-GMP-006-002	2.84	Pass
06-PD1-GMP-006-003	2.29	Fail
06-PD1-GMP-006-004	2.45	Fail
06-PD1-GMP-006-005	1.86	Fail
06-PD1-GMP-006-006	3.41	Pass
06-PD1-GMP-006-007	2.15	Fail
06-PD1-GMP-006-008	3.47	Pass
06-PD1-GMP-006-009	3.56	Pass
06-PD1-GMP-006-010	3.31	Pass
06-PD1-GMP-006-011	3.13	Pass
06-PD1-GMP-006-012	1.59	Fail
06-PD1-GMP-006-013	2.58	Fail
06-PD1-GMP-006-014	3.37	Pass
06-PD1-GMP-006-015	1.88	Fail
06-PD1-GMP-006-016	0.99	Fail
06-PD1-GMP-006-017	2.66	Pass
06-PD1-GMP-006-018	1.71	Fail
06-PD1-GMP-006-019	2.03	Fail
06-PD1-GMP-006-020	3.25	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-006-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1J190418

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-006-003	F1J190418-003	Lead-214	B6	J
06-PD1-GMP-006-004	F1J190418-004	Lead-214	B6	J
06-PD1-GMP-006-005	F1J190418-005	Lead-214	B6	J
06-PD1-GMP-006-007	F1J190418-007	Lead-214	B6	J
06-PD1-GMP-006-012	F1J190418-012	Lead-214	B6	J
06-PD1-GMP-006-013	F1J190418-013	Lead-214	B6	J
06-PD1-GMP-006-015	F1J190418-015	Lead-214	B6	J
06-PD1-GMP-006-016	F1J190418-016	Lead-214	B6	J
06-PD1-GMP-006-018	F1J190418-018	Lead-214	B6	J
06-PD1-GMP-006-019	F1J190418-019	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J190420
SAMPLING DATE(S): February 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-007-001	F1J190420-001	Soil	X
06-PD1-GMP-007-002	F1J190420-002	Soil	X
06-PD1-GMP-007-003	F1J190420-003	Soil	X
06-PD1-GMP-007-004	F1J190420-004	Soil	X
06-PD1-GMP-007-005	F1J190420-005	Soil	X
06-PD1-GMP-007-006	F1J190420-006	Soil	X
06-PD1-GMP-007-007	F1J190420-007	Soil	X
06-PD1-GMP-007-008	F1J190420-008	Soil	X
06-PD1-GMP-007-009	F1J190420-009	Soil	X
06-PD1-GMP-007-010	F1J190420-010	Soil	X
06-PD1-GMP-007-011	F1J190420-011	Soil	X
06-PD1-GMP-007-012	F1J190420-012	Soil	X
06-PD1-GMP-007-013	F1J190420-013	Soil	X
06-PD1-GMP-007-014	F1J190420-014	Soil	X
06-PD1-GMP-007-015	F1J190420-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-007-016	F1J190420-016	Soil	X
06-PD1-GMP-007-017	F1J190420-017	Soil	X
06-PD1-GMP-007-018	F1J190420-018	Soil	X
06-PD1-GMP-007-019	F1J190420-019	Soil	X
06-PD1-GMP-007-020	F1J190420-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190420 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 60 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-007-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190420

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 22, 2012
SDG NUMBER: F1J190422
SAMPLING DATE(S): March 30, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-014-001	F1J190422-001	Soil	X
06-PD1-GMP-014-002	F1J190422-002	Soil	X
06-PD1-GMP-014-003	F1J190422-003	Soil	X
06-PD1-GMP-014-004	F1J190422-004	Soil	X
06-PD1-GMP-014-005	F1J190422-005	Soil	X
06-PD1-GMP-014-006	F1J190422-006	Soil	X
06-PD1-GMP-014-007	F1J190422-007	Soil	X
06-PD1-GMP-014-008	F1J190422-008	Soil	X
06-PD1-GMP-014-009	F1J190422-009	Soil	X
06-PD1-GMP-014-010	F1J190422-010	Soil	X
06-PD1-GMP-014-011	F1J190422-011	Soil	X
06-PD1-GMP-014-012	F1J190422-012	Soil	X
06-PD1-GMP-014-013	F1J190422-013	Soil	X
06-PD1-GMP-014-014	F1J190422-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-014-015	F1J190422-015	Soil	X
06-PD1-GMP-014-016	F1J190422-016	Soil	X
06-PD1-GMP-014-017	F1J190422-017	Soil	X
06-PD1-GMP-014-018	F1J190422-018	Soil	X
06-PD1-GMP-014-019	F1J190422-019	Soil	X
06-PD1-GMP-014-020	F1J190422-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190422 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 27-47 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-014-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1J190422

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1J190424
SAMPLING DATE(S): March 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-015-001	F1J190424-001	Soil	X
06-PD1-GMP-015-002	F1J190424-002	Soil	X
06-PD1-GMP-015-003	F1J190424-003	Soil	X
06-PD1-GMP-015-004	F1J190424-004	Soil	X
06-PD1-GMP-015-005	F1J190424-005	Soil	X
06-PD1-GMP-015-006	F1J190424-006	Soil	X
06-PD1-GMP-015-007	F1J190424-007	Soil	X
06-PD1-GMP-015-008	F1J190424-008	Soil	X
06-PD1-GMP-015-009	F1J190424-009	Soil	X
06-PD1-GMP-015-010	F1J190424-010	Soil	X
06-PD1-GMP-015-011	F1J190424-011	Soil	X
06-PD1-GMP-015-012	F1J190424-012	Soil	X
06-PD1-GMP-015-013	F1J190424-013	Soil	X
06-PD1-GMP-015-014	F1J190424-014	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-GMP-015-015	F1J190424-015	Soil	X
06-PD1-GMP-015-016	F1J190424-016	Soil	X
06-PD1-GMP-015-017	F1J190424-017	Soil	X
06-PD1-GMP-015-018	F1J190424-018	Soil	X
06-PD1-GMP-015-019	F1J190424-019	Soil	X
06-PD1-GMP-015-020	F1J190424-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190424 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 31-64 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-015-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190424

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1J190425
SAMPLING DATE(S): March 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-015-021	F1J190425-001	Soil	X
06-PD1-GMP-015-022	F1J190425-002	Soil	X
06-PD1-GMP-015-023	F1J190425-003	Soil	X
06-PD1-GMP-015-024	F1J190425-004	Soil	X
06-PD1-GMP-015-025	F1J190425-005	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190425 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 32-64 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-015-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190425

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1J190426
SAMPLING DATE(S): March 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-015-021	F1J190426-001	Soil	X
06-PD1-GMP-015-022	F1J190426-002	Soil	X
06-PD1-GMP-015-023	F1J190426-003	Soil	X
06-PD1-GMP-015-024	F1J190426-004	Soil	X
06-PD1-GMP-015-025	F1J190426-005	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190426 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 27 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-015-021 of SDG F1J190425. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190426

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J190455
SAMPLING DATE(S): February 24, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-003-001	F1J190455-001	Soil	X
06-PD1-GMP-003-002	F1J190455-002	Soil	X
06-PD1-GMP-003-003	F1J190455-003	Soil	X
06-PD1-GMP-003-004	F1J190455-004	Soil	X
06-PD1-GMP-003-005	F1J190455-005	Soil	X
06-PD1-GMP-003-006	F1J190455-006	Soil	X
06-PD1-GMP-003-007	F1J190455-007	Soil	X
06-PD1-GMP-003-008	F1J190455-008	Soil	X
06-PD1-GMP-003-009	F1J190455-009	Soil	X
06-PD1-GMP-003-010	F1J190455-010	Soil	X
06-PD1-GMP-003-011	F1J190455-011	Soil	X
06-PD1-GMP-003-012	F1J190455-012	Soil	X
06-PD1-GMP-003-013	F1J190455-013	Soil	X
06-PD1-GMP-003-014	F1J190455-014	Soil	X
06-PD1-GMP-003-015	F1J190455-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-003-016	F1J190455-016	Soil	X
06-PD1-GMP-003-017	F1J190455-017	Soil	X
06-PD1-GMP-003-018	F1J190455-018	Soil	X
06-PD1-GMP-003-019	F1J190455-019	Soil	X
06-PD1-GMP-003-020	F1J190455-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190455 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 56-62 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J200000-098B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.142 pCi/g	0.0896 pCi/g	3.16

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-003-001	2.77	Pass
06-PD1-GMP-003-002	2.93	Pass
06-PD1-GMP-003-003	3.12	Pass
06-PD1-GMP-003-004	2.82	Pass
06-PD1-GMP-003-005	3.16	Pass
06-PD1-GMP-003-006	2.00	Fail
06-PD1-GMP-003-007	3.37	Pass
06-PD1-GMP-003-008	2.29	Fail
06-PD1-GMP-003-009	3.00	Pass
06-PD1-GMP-003-010	3.13	Pass
06-PD1-GMP-003-011	3.22	Pass
06-PD1-GMP-003-012	3.67	Pass
06-PD1-GMP-003-013	3.67	Pass
06-PD1-GMP-003-014	3.44	Pass
06-PD1-GMP-003-015	3.58	Pass
06-PD1-GMP-003-016	3.31	Pass
06-PD1-GMP-003-017	2.72	Pass
06-PD1-GMP-003-018	3.34	Pass
06-PD1-GMP-003-019	1.36	Fail
06-PD1-GMP-003-020	1.58	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-003-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190455

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-003-006	F1J190455-006	Lead-214	B6	J
06-PD1-GMP-003-008	F1J190455-008	Lead-214	B6	J
06-PD1-GMP-003-019	F1J190455-019	Lead-214	B6	J
06-PD1-GMP-003-020	F1J190455-020	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J190457
SAMPLING DATE(S): February 23, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-002-001	F1J190457-001	Soil	X
06-PD1-GMP-002-002	F1J190457-002	Soil	X
06-PD1-GMP-002-003	F1J190457-003	Soil	X
06-PD1-GMP-002-004	F1J190457-004	Soil	X
06-PD1-GMP-002-005	F1J190457-005	Soil	X
06-PD1-GMP-002-006	F1J190457-006	Soil	X
06-PD1-GMP-002-007	F1J190457-007	Soil	X
06-PD1-GMP-002-008	F1J190457-008	Soil	X
06-PD1-GMP-002-009	F1J190457-009	Soil	X
06-PD1-GMP-002-010	F1J190457-010	Soil	X
06-PD1-GMP-002-011	F1J190457-011	Soil	X
06-PD1-GMP-002-012	F1J190457-012	Soil	X
06-PD1-GMP-002-013	F1J190457-013	Soil	X
06-PD1-GMP-002-014	F1J190457-014	Soil	X
06-PD1-GMP-002-015	F1J190457-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-002-016	F1J190457-016	Soil	X
06-PD1-GMP-002-017	F1J190457-017	Soil	X
06-PD1-GMP-002-018	F1J190457-018	Soil	X
06-PD1-GMP-002-019	F1J190457-019	Soil	X
06-PD1-GMP-002-020	F1J190457-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190457 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 57-85 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-002-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190457

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J190460
SAMPLING DATE(S): February 24, 2011- February 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-004-001	F1J190460-001	Soil	X
06-PD1-GMP-004-002	F1J190460-002	Soil	X
06-PD1-GMP-004-003	F1J190460-003	Soil	X
06-PD1-GMP-004-004	F1J190460-004	Soil	X
06-PD1-GMP-004-005	F1J190460-005	Soil	X
06-PD1-GMP-004-006	F1J190460-006	Soil	X
06-PD1-GMP-004-007	F1J190460-007	Soil	X
06-PD1-GMP-004-008	F1J190460-008	Soil	X
06-PD1-GMP-004-009	F1J190460-009	Soil	X
06-PD1-GMP-004-010	F1J190460-010	Soil	X
06-PD1-GMP-004-011	F1J190460-011	Soil	X
06-PD1-GMP-004-012	F1J190460-012	Soil	X
06-PD1-GMP-004-013	F1J190460-013	Soil	X
06-PD1-GMP-004-014	F1J190460-014	Soil	X
06-PD1-GMP-004-015	F1J190460-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-004-016	F1J190460-016	Soil	X
06-PD1-GMP-004-017	F1J190460-017	Soil	X
06-PD1-GMP-004-018	F1J190460-018	Soil	X
06-PD1-GMP-004-019	F1J190460-019	Soil	X
06-PD1-GMP-004-020	F1J190460-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190460 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 56-75 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J200000-100B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.151 pCi/g	0.0803 pCi/g	3.76

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-004-001	3.08	Pass
06-PD1-GMP-004-002	2.35	Fail
06-PD1-GMP-004-003	4.48	Pass
06-PD1-GMP-004-004	2.64	Pass
06-PD1-GMP-004-005	3.89	Pass
06-PD1-GMP-004-006	2.50	Fail
06-PD1-GMP-004-007	4.38	Pass
06-PD1-GMP-004-008	2.07	Fail
06-PD1-GMP-004-009	3.46	Pass
06-PD1-GMP-004-010	2.32	Fail
06-PD1-GMP-004-011	3.29	Pass
06-PD1-GMP-004-012	3.70	Pass
06-PD1-GMP-004-013	2.88	Pass
06-PD1-GMP-004-014	3.41	Pass
06-PD1-GMP-004-015	2.21	Fail
06-PD1-GMP-004-016	2.35	Fail
06-PD1-GMP-004-017	3.36	Pass
06-PD1-GMP-004-018	1.31	Fail
06-PD1-GMP-004-019	2.66	Pass
06-PD1-GMP-004-020	3.30	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-004-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190460

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-004-002	F1J190460-002	Lead-214	B6	J
06-PD1-GMP-004-006	F1J190460-006	Lead-214	B6	J
06-PD1-GMP-004-008	F1J190460-008	Lead-214	B6	J
06-PD1-GMP-004-010	F1J190460-010	Lead-214	B6	J
06-PD1-GMP-004-015	F1J190460-015	Lead-214	B6	J
06-PD1-GMP-004-016	F1J190460-016	Lead-214	B6	J
06-PD1-GMP-004-018	F1J190460-018	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J190461
SAMPLING DATE(S): April 07, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-009-001	F1J190461-001	Soil	X
06-PD1-GMP-009-002	F1J190461-002	Soil	X
06-PD1-GMP-009-003	F1J190461-003	Soil	X
06-PD1-GMP-009-004	F1J190461-004	Soil	X
06-PD1-GMP-009-005	F1J190461-005	Soil	X
06-PD1-GMP-009-006	F1J190461-006	Soil	X
06-PD1-GMP-009-007	F1J190461-007	Soil	X
06-PD1-GMP-009-008	F1J190461-008	Soil	X
06-PD1-GMP-009-009	F1J190461-009	Soil	X
06-PD1-GMP-009-010	F1J190461-010	Soil	X
06-PD1-GMP-009-011	F1J190461-011	Soil	X
06-PD1-GMP-009-012	F1J190461-012	Soil	X
06-PD1-GMP-009-013	F1J190461-013	Soil	X
06-PD1-GMP-009-014	F1J190461-014	Soil	X
06-PD1-GMP-009-015	F1J190461-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-009-016	F1J190461-016	Soil	X
06-PD1-GMP-009-017	F1J190461-017	Soil	X
06-PD1-GMP-009-018	F1J190461-018	Soil	X
06-PD1-GMP-009-019	F1J190461-019	Soil	X
06-PD1-GMP-009-020	F1J190461-020	Soil	X
06-PD1-GMP-009-021	F1J190461-021	Soil	X
06-PD1-GMP-009-022	F1J190461-022	Soil	X
06-PD1-GMP-009-023	F1J190461-023	Soil	X
06-PD1-GMP-009-024	F1J190461-024	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190461 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 13-41 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity for batch 1293113 exceeded the 2.58 laboratory QC limit in method blank F1J200000-113B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.1239 pCi/g	0.0703 pCi/g	3.52

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-009-001	3.26	Pass
06-PD1-GMP-009-002	2.43	Fail
06-PD1-GMP-009-003	3.84	Pass
06-PD1-GMP-009-004	3.23	Pass
06-PD1-GMP-009-005	2.77	Pass
06-PD1-GMP-009-006	2.36	Fail
06-PD1-GMP-009-007	2.44	Fail
06-PD1-GMP-009-008	1.68	Fail
06-PD1-GMP-009-009	2.81	Pass
06-PD1-GMP-009-010	2.38	Fail
06-PD1-GMP-009-011	3.14	Pass
06-PD1-GMP-009-012	2.44	Fail
06-PD1-GMP-009-013	2.98	Pass
06-PD1-GMP-009-014	3.67	Pass
06-PD1-GMP-009-015	2.94	Pass
06-PD1-GMP-009-016	1.14	Fail
06-PD1-GMP-009-017	2.96	Pass
06-PD1-GMP-009-018	3.28	Pass
06-PD1-GMP-009-019	3.02	Pass
06-PD1-GMP-009-020	1.13	Fail

The blank activity for batch 1294024 exceeded the 2.58 laboratory QC limit in method blank F1J100000-024B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.1241 pCi/g	0.0916 pCi/g	2.71

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-009-021	1.92	Fail
06-PD1-GMP-009-022	3.53	Pass
06-PD1-GMP-009-023	3.87	Pass
06-PD1-GMP-009-024	3.15	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-009-001 and 06-PD1-GMP-009-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190461

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-009-002	F1J190461-002	Lead-214	B6	J
06-PD1-GMP-009-006	F1J190461-006	Lead-214	B6	J
06-PD1-GMP-009-007	F1J190461-007	Lead-214	B6	J
06-PD1-GMP-009-008	F1J190461-008	Lead-214	B6	J
06-PD1-GMP-009-010	F1J190461-010	Lead-214	B6	J
06-PD1-GMP-009-012	F1J190461-012	Lead-214	B6	J
06-PD1-GMP-009-016	F1J190461-015	Lead-214	B6	J
06-PD1-GMP-009-020	F1J190461-020	Lead-214	B6	J
06-PD1-GMP-009-021	F1J190461-021	Lead-214	B6	J

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J190464
SAMPLING DATE(S): March 29, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-027-001	F1J190464-001	Soil	X
06-PD1-GMP-027-002	F1J190464-002	Soil	X
06-PD1-GMP-027-003	F1J190464-003	Soil	X
06-PD1-GMP-027-004	F1J190464-004	Soil	X
06-PD1-GMP-027-005	F1J190464-005	Soil	X
06-PD1-GMP-027-006	F1J190464-006	Soil	X
06-PD1-GMP-027-007	F1J190464-007	Soil	X
06-PD1-GMP-027-008	F1J190464-008	Soil	X
06-PD1-GMP-027-009	F1J190464-009	Soil	X
06-PD1-GMP-027-010	F1J190464-010	Soil	X
06-PD1-GMP-027-011	F1J190464-011	Soil	X
06-PD1-GMP-027-012	F1J190464-012	Soil	X
06-PD1-GMP-027-013	F1J190464-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-027-014	F1J190464-014	Soil	X
06-PD1-GMP-027-015	F1J190464-015	Soil	X
06-PD1-GMP-027-016	F1J190464-016	Soil	X
06-PD1-GMP-027-017	F1J190464-017	Soil	X
06-PD1-GMP-027-018	F1J190464-018	Soil	X
06-PD1-GMP-027-019	F1J190464-019	Soil	X
06-PD1-GMP-027-020	F1J190464-020	Soil	X
06-PD1-GMP-027-021	F1J190464-021	Soil	X
06-PD1-GMP-027-022	F1J190464-022	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190464 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 26-57 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J200000-114B (batch 1293114) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.1905 pCi/g	0.0803 pCi/g	4.74

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-027-001	2.97	Pass
06-PD1-GMP-027-002	3.31	Pass
06-PD1-GMP-027-003	1.95	Fail
06-PD1-GMP-027-004	2.15	Fail
06-PD1-GMP-027-005	2.66	Pass
06-PD1-GMP-027-006	2.45	Fail
06-PD1-GMP-027-007	2.88	Pass
06-PD1-GMP-027-008	2.42	Fail
06-PD1-GMP-027-009	2.19	Fail
06-PD1-GMP-027-010	1.97	Fail
06-PD1-GMP-027-011	1.48	Fail
06-PD1-GMP-027-012	3.42	Pass
06-PD1-GMP-027-013	2.64	Pass
06-PD1-GMP-027-014	3.00	Pass
06-PD1-GMP-027-015	2.93	Pass
06-PD1-GMP-027-016	2.96	Pass
06-PD1-GMP-027-017	2.78	Pass
06-PD1-GMP-027-018	3.31	Pass
06-PD1-GMP-027-019	3.05	Pass
06-PD1-GMP-027-020	1.31	Fail

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J210000-024B (batch 1294024) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.124 pCi/g	0.0916 pCi/g	2.71

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-027-021	3.77	Pass
06-PD1-GMP-027-022	2.40	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-027-001 of this SDG and 06-PD1-GMP-009-021 of SDG F1J190461. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190464

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-027-003	F1J190464-003	Lead-214	B6	J
06-PD1-GMP-027-004	F1J190464-004	Lead-214	B6	J
06-PD1-GMP-027-006	F1J190464-006	Lead-214	B6	J
06-PD1-GMP-027-008	F1J190464-008	Lead-214	B6	J
06-PD1-GMP-027-009	F1J190464-009	Lead-214	B6	J
06-PD1-GMP-027-010	F1J190464-010	Lead-214	B6	J
06-PD1-GMP-027-011	F1J190464-011	Lead-214	B6	J
06-PD1-GMP-027-020	F1J190464-020	Lead-214	B6	J
06-PD1-GMP-027-022	F1J190464-022	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1J190465
SAMPLING DATE(S): April 02, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-013-001	F1J190465-001	Soil	X
06-PD1-GMP-013-002	F1J190465-002	Soil	X
06-PD1-GMP-013-003	F1J190465-003	Soil	X
06-PD1-GMP-013-004	F1J190465-004	Soil	X
06-PD1-GMP-013-005	F1J190465-005	Soil	X
06-PD1-GMP-013-006	F1J190465-006	Soil	X
06-PD1-GMP-013-007	F1J190465-007	Soil	X
06-PD1-GMP-013-008	F1J190465-008	Soil	X
06-PD1-GMP-013-009	F1J190465-009	Soil	X
06-PD1-GMP-013-010	F1J190465-010	Soil	X
06-PD1-GMP-013-011	F1J190465-011	Soil	X
06-PD1-GMP-013-012	F1J190465-012	Soil	X
06-PD1-GMP-013-013	F1J190465-013	Soil	X
06-PD1-GMP-013-014	F1J190465-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-013-015	F1J190465-015	Soil	X
06-PD1-GMP-013-016	F1J190465-016	Soil	X
06-PD1-GMP-013-017	F1J190465-017	Soil	X
06-PD1-GMP-013-018	F1J190465-018	Soil	X
06-PD1-GMP-013-019	F1J190465-019	Soil	X
06-PD1-GMP-013-020	F1J190465-020	Soil	X
06-PD1-GMP-013-021	F1J190465-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190465 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 19-45 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements for method blank F1J200000-115B. No data qualification was necessary.

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J210000-024B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.124 pCi/g	0.0916 pCi/g	2.71

Z_{DER} was calculated to determine the relative difference of the sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample was demonstrated to be significantly different ($Z_{DER} > 2.58$) and did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-013-021	2.80	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-013-001 of this SDG and sample 06-PD1-GMP-009-021 of SDG F1J190461. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190465

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J190467
SAMPLING DATE(S): February 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-005-001	F1J190467-001	Soil	X
06-PD1-GMP-005-002	F1J190467-002	Soil	X
06-PD1-GMP-005-003	F1J190467-003	Soil	X
06-PD1-GMP-005-004	F1J190467-004	Soil	X
06-PD1-GMP-005-005	F1J190467-005	Soil	X
06-PD1-GMP-005-006	F1J190467-006	Soil	X
06-PD1-GMP-005-007	F1J190467-007	Soil	X
06-PD1-GMP-005-008	F1J190467-008	Soil	X
06-PD1-GMP-005-009	F1J190467-009	Soil	X
06-PD1-GMP-005-010	F1J190467-010	Soil	X
06-PD1-GMP-005-011	F1J190467-011	Soil	X
06-PD1-GMP-005-012	F1J190467-012	Soil	X
06-PD1-GMP-005-013	F1J190467-013	Soil	X
06-PD1-GMP-005-014	F1J190467-014	Soil	X
06-PD1-GMP-005-015	F1J190467-015	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-GMP-005-016	F1J190467-016	Soil	X
06-PD1-GMP-005-017	F1J190467-017	Soil	X
06-PD1-GMP-005-018	F1J190467-018	Soil	X
06-PD1-GMP-005-019	F1J190467-019	Soil	X
06-PD1-GMP-005-020	F1J190467-020	Soil	X
06-PD1-GMP-005-021	F1J190467-021	Soil	X
06-PD1-GMP-005-022	F1J190467-022	Soil	X
06-PD1-GMP-005-023	F1J190467-023	Soil	X
06-PD1-GMP-005-024	F1J190467-024	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190467 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 56-76 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank criteria for batch 1293116 met laboratory requirements. No data qualification was necessary.

The blank activity for batch 1294024 exceeded the 2.58 laboratory QC limit in method blank F1J100000-024B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.124 pCi/g	0.0916 pCi/g	2.71

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-005-021	1.53	Fail
06-PD1-GMP-005-022	2.63	Pass
06-PD1-GMP-005-023	1.13	Fail
06-PD1-GMP-005-024	2.99	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-005-001 of this SDG and 06-PD1-GMP-009-021 of SDG F1J190461. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190467

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-005-021	F1J190467-021	Lead-214	B6	J
06-PD1-GMP-005-023	F1J190467-023	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: October 15, 2012
SDG NUMBER: F1J190469
SAMPLING DATE(S): April 07, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-010-003	F1J190469-001	Soil	X
06-PD1-GMP-010-008	F1J190469-002	Soil	X
06-PD1-GMP-010-017	F1J190469-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J190469 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-010-003 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J190469

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1J250471
SAMPLING DATE(S): April 06, 2011 - April 18, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-061-007	F1J250471-001	Soil	X
06-PD1-GMP-062-005	F1J250471-002	Soil	X
06-PD1-GMP-062-008	F1J250471-003	Soil	X
06-PD1-GMP-062-020	F1J250471-004	Soil	X
06-PD1-GMP-063-004	F1J250471-005	Soil	X
06-PD1-GMP-063-006	F1J250471-006	Soil	X
06-PD1-GMP-064-001	F1J250471-007	Soil	X
06-PD1-GMP-064-004	F1J250471-008	Soil	X
06-PD1-GMP-064-011	F1J250471-009	Soil	X
06-PD1-GMP-065-003	F1J250471-010	Soil	X
06-PD1-GMP-065-007	F1J250471-011	Soil	X
06-PD1-GMP-065-020	F1J250471-012	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250471 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criterion of 180 days by 20-32 days. Due to the relatively long half-life of Strontium-90 (28.6 years), this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-061-007 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250471

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-0130

(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J250473
SAMPLING DATE(S): April 02, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-033-001	F1J250473-001	Soil	X
06-PD1-GMP-033-002	F1J250473-002	Soil	X
06-PD1-GMP-033-003	F1J250473-003	Soil	X
06-PD1-GMP-033-004	F1J250473-004	Soil	X
06-PD1-GMP-033-005	F1J250473-005	Soil	X
06-PD1-GMP-033-006	F1J250473-006	Soil	X
06-PD1-GMP-033-007	F1J250473-007	Soil	X
06-PD1-GMP-033-008	F1J250473-008	Soil	X
06-PD1-GMP-033-009	F1J250473-009	Soil	X
06-PD1-GMP-033-010	F1J250473-010	Soil	X
06-PD1-GMP-033-011	F1J250473-011	Soil	X
06-PD1-GMP-033-012	F1J250473-012	Soil	X
06-PD1-GMP-033-013	F1J250473-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-033-014	F1J250473-014	Soil	X
06-PD1-GMP-033-015	F1J250473-015	Soil	X
06-PD1-GMP-033-016	F1J250473-016	Soil	X
06-PD1-GMP-033-017	F1J250473-017	Soil	X
06-PD1-GMP-033-018	F1J250473-018	Soil	X
06-PD1-GMP-033-019	F1J250473-019	Soil	X
06-PD1-GMP-033-020	F1J250473-020	Soil	X
06-PD1-GMP-033-021	F1J250473-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250473 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 29-48 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-033-001 of this SDG and 06-PD1-GMP-024-021 of SDG F1J250469. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250473

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1J250475
SAMPLING DATE(S): April 08, 2011 - April 16, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-037-004	F1J250475-003	Soil	X
06-PD1-GMP-037-009	F1J250475-004	Soil	X
06-PD1-GMP-037-019	F1J250475-005	Soil	X
06-PD1-GMP-038-005	F1J250475-006	Soil	X
06-PD1-GMP-038-010	F1J250475-007	Soil	X
06-PD1-GMP-038-017	F1J250475-008	Soil	X
06-PD1-GMP-041-006	F1J250475-012	Soil	X
06-PD1-GMP-041-016	F1J250475-013	Soil	X
06-PD1-GMP-041-018	F1J250475-014	Soil	X
06-PD1-GMP-054-004	F1J250475-015	Soil	X
06-PD1-GMP-054-005	F1J250475-016	Soil	X
06-PD1-GMP-054-018	F1J250475-017	Soil	X
06-PD1-GMP-055-001	F1J250475-018	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-055-002	F1J250475-019	Soil	X
06-PD1-GMP-055-019	F1J250475-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250475 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 20-31 days. Due to the relatively long half-lives of the analytes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-038-005 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250475

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J250479
SAMPLING DATE(S): April 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-038-001	F1J250479-001	Soil	X
06-PD1-GMP-038-002	F1J250479-002	Soil	X
06-PD1-GMP-038-003	F1J250479-003	Soil	X
06-PD1-GMP-038-004	F1J250479-004	Soil	X
06-PD1-GMP-038-005	F1J250479-005	Soil	X
06-PD1-GMP-038-006	F1J250479-006	Soil	X
06-PD1-GMP-038-007	F1J250479-007	Soil	X
06-PD1-GMP-038-008	F1J250479-008	Soil	X
06-PD1-GMP-038-009	F1J250479-009	Soil	X
06-PD1-GMP-038-010	F1J250479-010	Soil	X
06-PD1-GMP-038-011	F1J250479-011	Soil	X
06-PD1-GMP-038-012	F1J250479-012	Soil	X
06-PD1-GMP-038-013	F1J250479-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-038-014	F1J250479-014	Soil	X
06-PD1-GMP-038-015	F1J250479-015	Soil	X
06-PD1-GMP-038-016	F1J250479-016	Soil	X
06-PD1-GMP-038-017	F1J250479-017	Soil	X
06-PD1-GMP-038-018	F1J250479-018	Soil	X
06-PD1-GMP-038-019	F1J250479-019	Soil	X
06-PD1-GMP-038-020	F1J250479-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250479 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 18-35 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-038-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250479

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1J250481
SAMPLING DATE(S): March 25, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-016-001	F1J250481-001	Soil	X
06-PD1-GMP-016-002	F1J250481-002	Soil	X
06-PD1-GMP-016-003	F1J250481-003	Soil	X
06-PD1-GMP-016-004	F1J250481-004	Soil	X
06-PD1-GMP-016-005	F1J250481-005	Soil	X
06-PD1-GMP-016-006	F1J250481-006	Soil	X
06-PD1-GMP-016-007	F1J250481-007	Soil	X
06-PD1-GMP-016-008	F1J250481-008	Soil	X
06-PD1-GMP-016-009	F1J250481-009	Soil	X
06-PD1-GMP-016-010	F1J250481-010	Soil	X
06-PD1-GMP-016-011	F1J250481-011	Soil	X
06-PD1-GMP-016-012	F1J250481-012	Soil	X
06-PD1-GMP-016-013	F1J250481-013	Soil	X
06-PD1-GMP-016-014	F1J250481-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-016-015	F1J250481-015	Soil	X
06-PD1-GMP-016-016	F1J250481-016	Soil	X
06-PD1-GMP-016-017	F1J250481-017	Soil	X
06-PD1-GMP-016-018	F1J250481-018	Soil	X
06-PD1-GMP-016-019	F1J250481-019	Soil	X
06-PD1-GMP-016-020	F1J250481-020	Soil	X
06-PD1-GMP-016-021	F1J250481-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250481 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 33-57 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-016-001 of this SDG and sample F1J250469-021 of SDG F1J250469. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250481

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 13, 2012
SDG NUMBER: F1J250482
SAMPLING DATE(S): April 06, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-061-001	F1J250482-001	Soil	X
06-PD1-GMP-061-002	F1J250482-002	Soil	X
06-PD1-GMP-061-003	F1J250482-003	Soil	X
06-PD1-GMP-061-004	F1J250482-004	Soil	X
06-PD1-GMP-061-005	F1J250482-005	Soil	X
06-PD1-GMP-061-006	F1J250482-006	Soil	X
06-PD1-GMP-061-007	F1J250482-007	Soil	X
06-PD1-GMP-061-008	F1J250482-008	Soil	X
06-PD1-GMP-061-009	F1J250482-009	Soil	X
06-PD1-GMP-061-010	F1J250482-010	Soil	X
06-PD1-GMP-061-011	F1J250482-011	Soil	X
06-PD1-GMP-061-012	F1J250482-012	Soil	X
06-PD1-GMP-061-013	F1J250482-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-061-014	F1J250482-014	Soil	X
06-PD1-GMP-061-015	F1J250482-015	Soil	X
06-PD1-GMP-061-016	F1J250482-016	Soil	X
06-PD1-GMP-061-017	F1J250482-017	Soil	X
06-PD1-GMP-061-018	F1J250482-018	Soil	X
06-PD1-GMP-061-019	F1J250482-019	Soil	X
06-PD1-GMP-061-020	F1J250482-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250482 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criterion of 180 days by 28-44 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J310000-058B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.192 pCi/g	0.0726 pCi/g	5.28

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-061-001	3.04	Pass
06-PD1-GMP-061-002	1.17	Fail
06-PD1-GMP-061-003	3.74	Pass
06-PD1-GMP-061-004	2.54	Fail
06-PD1-GMP-061-005	2.81	Pass
06-PD1-GMP-061-006	2.95	Pass
06-PD1-GMP-061-007	1.78	Fail
06-PD1-GMP-061-008	3.49	Pass
06-PD1-GMP-061-009	3.10	Pass
06-PD1-GMP-061-010	1.95	Fail
06-PD1-GMP-061-011	3.04	Pass
06-PD1-GMP-061-012	3.17	Pass
06-PD1-GMP-061-013	0.29	Fail
06-PD1-GMP-061-014	2.81	Pass
06-PD1-GMP-061-015	1.65	Fail
06-PD1-GMP-061-016	2.40	Fail
06-PD1-GMP-061-017	2.95	Pass
06-PD1-GMP-061-018	2.33	Fail
06-PD1-GMP-061-019	3.54	Pass
06-PD1-GMP-061-020	1.45	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-061-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1J250482

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-061-002	F1J250482-002	Lead-214	B6	J
06-PD1-GMP-061-004	F1J250482-004	Lead-214	B6	J
06-PD1-GMP-061-007	F1J250482-007	Lead-214	B6	J
06-PD1-GMP-061-010	F1J250482-010	Lead-214	B6	J
06-PD1-GMP-061-013	F1J250482-013	Lead-214	B6	J
06-PD1-GMP-061-015	F1J250482-015	Lead-214	B6	J
06-PD1-GMP-061-016	F1J250482-016	Lead-214	B6	J
06-PD1-GMP-061-018	F1J250482-018	Lead-214	B6	J
06-PD1-GMP-061-020	F1J250482-020	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 13, 2012
SDG NUMBER: F1J250484
SAMPLING DATE(S): April 06, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-062-001	F1J250484-001	Soil	X
06-PD1-GMP-062-002	F1J250484-002	Soil	X
06-PD1-GMP-062-003	F1J250484-003	Soil	X
06-PD1-GMP-062-004	F1J250484-004	Soil	X
06-PD1-GMP-062-005	F1J250484-005	Soil	X
06-PD1-GMP-062-006	F1J250484-006	Soil	X
06-PD1-GMP-062-007	F1J250484-007	Soil	X
06-PD1-GMP-062-008	F1J250484-008	Soil	X
06-PD1-GMP-062-009	F1J250484-009	Soil	X
06-PD1-GMP-062-010	F1J250484-010	Soil	X
06-PD1-GMP-062-011	F1J250484-011	Soil	X
06-PD1-GMP-062-012	F1J250484-012	Soil	X
06-PD1-GMP-062-013	F1J250484-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-062-014	F1J250484-014	Soil	X
06-PD1-GMP-062-015	F1J250484-015	Soil	X
06-PD1-GMP-062-016	F1J250484-016	Soil	X
06-PD1-GMP-062-017	F1J250484-017	Soil	X
06-PD1-GMP-062-018	F1J250484-018	Soil	X
06-PD1-GMP-062-019	F1J250484-019	Soil	X
06-PD1-GMP-062-020	F1J250484-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250484 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criterion of 180 days by 28-46 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-062-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250484

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J250486
SAMPLING DATE(S): April 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-041-001	F1J250486-001	Soil	X
06-PD1-GMP-041-002	F1J250486-002	Soil	X
06-PD1-GMP-041-003	F1J250486-003	Soil	X
06-PD1-GMP-041-004	F1J250486-004	Soil	X
06-PD1-GMP-041-005	F1J250486-005	Soil	X
06-PD1-GMP-041-006	F1J250486-006	Soil	X
06-PD1-GMP-041-007	F1J250486-007	Soil	X
06-PD1-GMP-041-008	F1J250486-008	Soil	X
06-PD1-GMP-041-009	F1J250486-009	Soil	X
06-PD1-GMP-041-010	F1J250486-010	Soil	X
06-PD1-GMP-041-011	F1J250486-011	Soil	X
06-PD1-GMP-041-012	F1J250486-012	Soil	X
06-PD1-GMP-041-013	F1J250486-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-041-014	F1J250486-014	Soil	X
06-PD1-GMP-041-015	F1J250486-015	Soil	X
06-PD1-GMP-041-016	F1J250486-016	Soil	X
06-PD1-GMP-041-017	F1J250486-017	Soil	X
06-PD1-GMP-041-018	F1J250486-018	Soil	X
06-PD1-GMP-041-019	F1J250486-019	Soil	X
06-PD1-GMP-041-020	F1J250486-020	Soil	X
06-PD1-GMP-041-021	F1J250486-021	Soil	X
06-PD1-GMP-041-022	F1J250486-022	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250486 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 19-35 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J280000-165B (batch 1301165) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0971 pCi/g	0.0680 pCi/g	2.86

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J). Non-detected results did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-041-001	2.24	Fail
06-PD1-GMP-041-002	1.77	Fail
06-PD1-GMP-041-003	2.39	Fail
06-PD1-GMP-041-004	1.69	Fail
06-PD1-GMP-041-005	2.91	Pass
06-PD1-GMP-041-006	2.25	Fail
06-PD1-GMP-041-007	3.82	Pass
06-PD1-GMP-041-008	1.61	Fail
06-PD1-GMP-041-009	0.15	Fail
06-PD1-GMP-041-010	3.67	Pass
06-PD1-GMP-041-011	1.01	Fail
06-PD1-GMP-041-012	2.08	Fail
06-PD1-GMP-041-013	1.88	Fail
06-PD1-GMP-041-014	non-detect	N/A
06-PD1-GMP-041-015	2.75	Pass
06-PD1-GMP-041-016	2.91	Pass
06-PD1-GMP-041-017	2.16	Fail
06-PD1-GMP-041-018	3.19	Pass
06-PD1-GMP-041-019	0.41	Fail
06-PD1-GMP-041-020	2.63	Pass

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J280000-166B (batch 1301166) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0689 pCi/g	0.0469 pCi/g	2.93

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-041-021	2.54	Fail
06-PD1-GMP-041-022	0.99	Fail

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J280000-166B (batch 1301166) for the following isotopes:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Bismuth-214	0.107 pCi/g	0.0726 pCi/g	2.86
Radium-226	0.107 pCi/g	0.0726 pCi/g	2.86

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-041-021	1.32	Fail
06-PD1-GMP-041-022	1.07	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-041-001 and 06-PD1-GMP-041-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250486

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-041-001	F1J250486-001	Lead-214	B6	J
06-PD1-GMP-041-002	F1J250486-002	Lead-214	B6	J
06-PD1-GMP-041-003	F1J250486-003	Lead-214	B6	J
06-PD1-GMP-041-004	F1J250486-004	Lead-214	B6	J
06-PD1-GMP-041-006	F1J250486-006	Lead-214	B6	J
06-PD1-GMP-041-008	F1J250486-008	Lead-214	B6	J
06-PD1-GMP-041-009	F1J250486-009	Lead-214	B6	J
06-PD1-GMP-041-011	F1J250486-011	Lead-214	B6	J
06-PD1-GMP-041-012	F1J250486-012	Lead-214	B6	J
06-PD1-GMP-041-013	F1J250486-013	Lead-214	B6	J
06-PD1-GMP-041-017	F1J250486-017	Lead-214	B6	J
06-PD1-GMP-041-019	F1J250486-019	Lead-214	B6	J
06-PD1-GMP-041-021	F1J250486-021	Lead-214 Radium-226 Bismuth-214	B6	J
06-PD1-GMP-041-022	F1J250486-022	Lead-214 Radium-226 Bismuth-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 13, 2012
SDG NUMBER: F1J250489
SAMPLING DATE(S): April 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-064-001	F1J250489-001	Soil	X
06-PD1-GMP-064-002	F1J250489-002	Soil	X
06-PD1-GMP-064-003	F1J250489-003	Soil	X
06-PD1-GMP-064-004	F1J250489-004	Soil	X
06-PD1-GMP-064-005	F1J250489-005	Soil	X
06-PD1-GMP-064-006	F1J250489-006	Soil	X
06-PD1-GMP-064-007	F1J250489-007	Soil	X
06-PD1-GMP-064-008	F1J250489-008	Soil	X
06-PD1-GMP-064-009	F1J250489-009	Soil	X
06-PD1-GMP-064-010	F1J250489-010	Soil	X
06-PD1-GMP-064-011	F1J250489-011	Soil	X
06-PD1-GMP-064-012	F1J250489-012	Soil	X
06-PD1-GMP-064-013	F1J250489-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-064-014	F1J250489-014	Soil	X
06-PD1-GMP-064-015	F1J250489-015	Soil	X
06-PD1-GMP-064-016	F1J250489-016	Soil	X
06-PD1-GMP-064-017	F1J250489-017	Soil	X
06-PD1-GMP-064-018	F1J250489-018	Soil	X
06-PD1-GMP-064-019	F1J250489-019	Soil	X
06-PD1-GMP-064-020	F1J250489-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250489 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criterion of 180 days by 19-28 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-064-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250489

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 13, 2012
SDG NUMBER: F1J250490
SAMPLING DATE(S): April 18, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-065-001	F1J250490-001	Soil	X
06-PD1-GMP-065-002	F1J250490-002	Soil	X
06-PD1-GMP-065-003	F1J250490-003	Soil	X
06-PD1-GMP-065-004	F1J250490-004	Soil	X
06-PD1-GMP-065-005	F1J250490-005	Soil	X
06-PD1-GMP-065-006	F1J250490-006	Soil	X
06-PD1-GMP-065-007	F1J250490-007	Soil	X
06-PD1-GMP-065-008	F1J250490-008	Soil	X
06-PD1-GMP-065-009	F1J250490-009	Soil	X
06-PD1-GMP-065-010	F1J250490-010	Soil	X
06-PD1-GMP-065-011	F1J250490-011	Soil	X
06-PD1-GMP-065-012	F1J250490-012	Soil	X
06-PD1-GMP-065-013	F1J250490-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-065-014	F1J250490-014	Soil	X
06-PD1-GMP-065-015	F1J250490-015	Soil	X
06-PD1-GMP-065-016	F1J250490-016	Soil	X
06-PD1-GMP-065-017	F1J250490-017	Soil	X
06-PD1-GMP-065-018	F1J250490-018	Soil	X
06-PD1-GMP-065-019	F1J250490-019	Soil	X
06-PD1-GMP-065-020	F1J250490-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250490 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 17-26 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-065-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250490

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J250492
SAMPLING DATE(S): April 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-055-001	F1J250492-001	Soil	X
06-PD1-GMP-055-002	F1J250492-002	Soil	X
06-PD1-GMP-055-003	F1J250492-003	Soil	X
06-PD1-GMP-055-004	F1J250492-004	Soil	X
06-PD1-GMP-055-005	F1J250492-005	Soil	X
06-PD1-GMP-055-006	F1J250492-006	Soil	X
06-PD1-GMP-055-007	F1J250492-007	Soil	X
06-PD1-GMP-055-008	F1J250492-008	Soil	X
06-PD1-GMP-055-009	F1J250492-009	Soil	X
06-PD1-GMP-055-010	F1J250492-010	Soil	X
06-PD1-GMP-055-011	F1J250492-011	Soil	X
06-PD1-GMP-055-012	F1J250492-012	Soil	X
06-PD1-GMP-055-013	F1J250492-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-055-014	F1J250492-014	Soil	X
06-PD1-GMP-055-015	F1J250492-015	Soil	X
06-PD1-GMP-055-016	F1J250492-016	Soil	X
06-PD1-GMP-055-017	F1J250492-017	Soil	X
06-PD1-GMP-055-018	F1J250492-018	Soil	X
06-PD1-GMP-055-019	F1J250492-019	Soil	X
06-PD1-GMP-055-020	F1J250492-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250492 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 18-36 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-055-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250492

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J250494
SAMPLING DATE(S): April 02, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-032-001	F1J250494-001	Soil	X
06-PD1-GMP-032-002	F1J250494-002	Soil	X
06-PD1-GMP-032-003	F1J250494-003	Soil	X
06-PD1-GMP-032-004	F1J250494-004	Soil	X
06-PD1-GMP-032-005	F1J250494-005	Soil	X
06-PD1-GMP-032-006	F1J250494-006	Soil	X
06-PD1-GMP-032-007	F1J250494-007	Soil	X
06-PD1-GMP-032-008	F1J250494-008	Soil	X
06-PD1-GMP-032-009	F1J250494-009	Soil	X
06-PD1-GMP-032-010	F1J250494-010	Soil	X
06-PD1-GMP-032-011	F1J250494-011	Soil	X
06-PD1-GMP-032-012	F1J250494-012	Soil	X
06-PD1-GMP-032-013	F1J250494-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-032-014	F1J250494-014	Soil	X
06-PD1-GMP-032-015	F1J250494-015	Soil	X
06-PD1-GMP-032-016	F1J250494-016	Soil	X
06-PD1-GMP-032-017	F1J250494-017	Soil	X
06-PD1-GMP-032-018	F1J250494-018	Soil	X
06-PD1-GMP-032-019	F1J250494-019	Soil	X
06-PD1-GMP-032-020	F1J250494-020	Soil	X
06-PD1-GMP-032-021	F1J250494-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250494 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 32-50 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1J310000-062B (batch 1304062) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.167 pCi/g	0.0809 pCi/g	4.12

Z_{DER} was calculated to determine the relative difference of sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample that was demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-032-021	1.77	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-032-001 and 06-PD1-GMP-032-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250494

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-032-021	F1J250494-021	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J250496
SAMPLING DATE(S): April 08, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-037-001	F1J250496-001	Soil	X
06-PD1-GMP-037-002	F1J250496-002	Soil	X
06-PD1-GMP-037-003	F1J250496-003	Soil	X
06-PD1-GMP-037-004	F1J250496-004	Soil	X
06-PD1-GMP-037-005	F1J250496-005	Soil	X
06-PD1-GMP-037-006	F1J250496-006	Soil	X
06-PD1-GMP-037-007	F1J250496-007	Soil	X
06-PD1-GMP-037-008	F1J250496-008	Soil	X
06-PD1-GMP-037-009	F1J250496-009	Soil	X
06-PD1-GMP-037-010	F1J250496-010	Soil	X
06-PD1-GMP-037-011	F1J250496-011	Soil	X
06-PD1-GMP-037-012	F1J250496-012	Soil	X
06-PD1-GMP-037-013	F1J250496-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-037-014	F1J250496-014	Soil	X
06-PD1-GMP-037-015	F1J250496-015	Soil	X
06-PD1-GMP-037-016	F1J250496-016	Soil	X
06-PD1-GMP-037-017	F1J250496-017	Soil	X
06-PD1-GMP-037-018	F1J250496-018	Soil	X
06-PD1-GMP-037-019	F1J250496-019	Soil	X
06-PD1-GMP-037-020	F1J250496-020	Soil	X
06-PD1-GMP-037-021	F1J250496-021	Soil	X
06-PD1-GMP-037-022	F1J250496-022	Soil	X
06-PD1-GMP-037-023	F1J250496-023	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250496 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 22-36 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-037-001 and 06-PD1-GMP-037-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250496

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

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4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1J250499
SAMPLING DATE(S): April 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-054-001	F1J250499-001	Soil	X
06-PD1-GMP-054-002	F1J250499-002	Soil	X
06-PD1-GMP-054-003	F1J250499-003	Soil	X
06-PD1-GMP-054-004	F1J250499-004	Soil	X
06-PD1-GMP-054-005	F1J250499-005	Soil	X
06-PD1-GMP-054-006	F1J250499-006	Soil	X
06-PD1-GMP-054-007	F1J250499-007	Soil	X
06-PD1-GMP-054-008	F1J250499-008	Soil	X
06-PD1-GMP-054-009	F1J250499-009	Soil	X
06-PD1-GMP-054-010	F1J250499-010	Soil	X
06-PD1-GMP-054-011	F1J250499-011	Soil	X
06-PD1-GMP-054-012	F1J250499-012	Soil	X
06-PD1-GMP-054-013	F1J250499-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-054-014	F1J250499-014	Soil	X
06-PD1-GMP-054-015	F1J250499-015	Soil	X
06-PD1-GMP-054-016	F1J250499-016	Soil	X
06-PD1-GMP-054-017	F1J250499-017	Soil	X
06-PD1-GMP-054-018	F1J250499-018	Soil	X
06-PD1-GMP-054-019	F1J250499-019	Soil	X
06-PD1-GMP-054-020	F1J250499-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250499 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 14-28 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-054-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250499

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 13, 2012
SDG NUMBER: F1J250501
SAMPLING DATE(S): April 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-063-001	F1J250501-001	Soil	X
06-PD1-GMP-063-002	F1J250501-002	Soil	X
06-PD1-GMP-063-003	F1J250501-003	Soil	X
06-PD1-GMP-063-004	F1J250501-004	Soil	X
06-PD1-GMP-063-005	F1J250501-005	Soil	X
06-PD1-GMP-063-006	F1J250501-006	Soil	X
06-PD1-GMP-063-007	F1J250501-007	Soil	X
06-PD1-GMP-063-008	F1J250501-008	Soil	X
06-PD1-GMP-063-009	F1J250501-009	Soil	X
06-PD1-GMP-063-010	F1J250501-010	Soil	X
06-PD1-GMP-063-011	F1J250501-011	Soil	X
06-PD1-GMP-063-012	F1J250501-012	Soil	X
06-PD1-GMP-063-013	F1J250501-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-063-014	F1J250501-014	Soil	X
06-PD1-GMP-063-015	F1J250501-015	Soil	X
06-PD1-GMP-063-016	F1J250501-016	Soil	X
06-PD1-GMP-063-017	F1J250501-017	Soil	X
06-PD1-GMP-063-018	F1J250501-018	Soil	X
06-PD1-GMP-063-019	F1J250501-019	Soil	X
06-PD1-GMP-063-020	F1J250501-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J250501 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 14-27 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-063-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J250501

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F1J280429
SAMPLING DATE(S): April 07, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-010-002	F1J280429-001	Soil	X
06-PD1-GMP-010-003	F1J280429-002	Soil	X
06-PD1-GMP-010-004	F1J280429-003	Soil	X
06-PD1-GMP-010-005	F1J280429-004	Soil	X
06-PD1-GMP-010-006	F1J280429-005	Soil	X
06-PD1-GMP-010-007	F1J280429-006	Soil	X
06-PD1-GMP-010-008	F1J280429-007	Soil	X
06-PD1-GMP-010-009	F1J280429-008	Soil	X
06-PD1-GMP-010-010	F1J280429-009	Soil	X
06-PD1-GMP-010-021	F1J280429-010	Soil	X
06-PD1-GMP-010-011	F1J280429-011	Soil	X
06-PD1-GMP-010-012	F1J280429-012	Soil	X
06-PD1-GMP-010-013	F1J280429-013	Soil	X
06-PD1-GMP-010-014	F1J280429-014	Soil	X
06-PD1-GMP-010-015	F1J280429-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-010-016	F1J280429-016	Soil	X
06-PD1-GMP-010-017	F1J280429-017	Soil	X
06-PD1-GMP-010-018	F1J280429-018	Soil	X
06-PD1-GMP-010-019	F1J280429-019	Soil	X
06-PD1-GMP-010-020	F1J280429-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1J280429 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 25 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-010-002 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1J280429

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1K220447
SAMPLING DATE(S): April 02, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-023-010	F1K220447-001	Soil	X
06-PD1-GMP-023-011	F1K220447-002	Soil	X
06-PD1-GMP-023-012	F1K220447-003	Soil	X
06-PD1-GMP-023-013	F1K220447-004	Soil	X
06-PD1-GMP-023-014	F1K220447-005	Soil	X
06-PD1-GMP-023-015	F1K220447-006	Soil	X
06-PD1-GMP-023-016	F1K220447-007	Soil	X
06-PD1-GMP-023-017	F1K220447-008	Soil	X
06-PD1-GMP-023-018	F1K220447-009	Soil	X
06-PD1-GMP-023-019	F1K220447-010	Soil	X
06-PD1-GMP-023-021	F1K220447-011	Soil	X
06-PD1-GMP-023-001	F1K220447-012	Soil	X
06-PD1-GMP-023-002	F1K220447-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-023-003	F1K220447-014	Soil	X
06-PD1-GMP-023-004	F1K220447-015	Soil	X
06-PD1-GMP-023-005	F1K220447-016	Soil	X
06-PD1-GMP-023-006	F1K220447-017	Soil	X
06-PD1-GMP-023-007	F1K220447-018	Soil	X
06-PD1-GMP-023-008	F1K220447-019	Soil	X
06-PD1-GMP-023-009	F1K220447-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K220447 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 60 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-023-010 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K220447

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1K220450
SAMPLING DATE(S): April 02, 2011 - April 04, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-023-020	F1K220450-001	Soil	X
06-PD1-GMP-023-021	F1K220450-002	Soil	X
06-PD1-GMP-023-022	F1K220450-003	Soil	X
06-PD1-GMP-023-023	F1K220450-004	Soil	X
06-PD1-GMP-023-024	F1K220450-005	Soil	X
06-PD1-GMP-021-011	F1K220450-011	Soil	X
06-PD1-GMP-021-012	F1K220450-012	Soil	X
06-PD1-GMP-021-013	F1K220450-013	Soil	X
06-PD1-GMP-021-014	F1K220450-014	Soil	X
06-PD1-GMP-021-015	F1K220450-015	Soil	X
06-PD1-GMP-021-016	F1K220450-016	Soil	X
06-PD1-GMP-021-017	F1K220450-017	Soil	X
06-PD1-GMP-021-018	F1K220450-018	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-021-019	F1K220450-019	Soil	X
06-PD1-GMP-021-020	F1K220450-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K220450 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 53-55 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1K230000-039B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0908 pCi/g	0.0674 pCi/g	2.69

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. All of the affected detected analytes in the associated samples were demonstrated to be significantly different ($Z_{DER} > 2.58$) and did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-023-020	3.07	Pass
06-PD1-GMP-023-021	3.79	Pass
06-PD1-GMP-023-022	3.62	Pass
06-PD1-GMP-023-023	3.14	Pass
06-PD1-GMP-023-024	2.91	Pass
06-PD1-GMP-021-011	3.44	Pass
06-PD1-GMP-021-012	4.24	Pass
06-PD1-GMP-021-013	3.41	Pass
06-PD1-GMP-021-014	3.92	Pass
06-PD1-GMP-021-015	2.69	Pass
06-PD1-GMP-021-016	3.73	Pass
06-PD1-GMP-021-017	3.09	Pass
06-PD1-GMP-021-018	3.22	Pass
06-PD1-GMP-021-019	2.77	Pass
06-PD1-GMP-021-020	3.34	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-023-020 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K220450

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 05, 2012
SDG NUMBER: F1K220453
SAMPLING DATE(S): April 20, 2011 – October 11, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-043-001	F1K220453-001	Soil	X
06-PD1-GMP-043-002	F1K220453-002	Soil	X
06-PD1-GMP-043-003	F1K220453-003	Soil	X
06-PD1-GMP-043-004	F1K220453-004	Soil	X
06-PD1-GMP-043-005	F1K220453-005	Soil	X
06-PD1-GMP-043-006	F1K220453-006	Soil	X
06-PD1-GMP-043-007	F1K220453-007	Soil	X
06-PD1-GMP-043-008	F1K220453-008	Soil	X
06-PD1-GMP-043-009	F1K220453-009	Soil	X
06-PD1-GMP-043-010	F1K220453-010	Soil	X
06-PD1-GMP-043-011	F1K220453-011	Soil	X
06-PD1-GMP-043-012	F1K220453-012	Soil	X
06-PD1-GMP-043-013	F1K220453-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-043-014	F1K220453-014	Soil	X
06-PD1-GMP-043-015	F1K220453-015	Soil	X
06-PD1-GMP-043-021	F1K220453-016	Soil	X
06-PD1-GMP-043-022	F1K220453-017	Soil	X
06-PD1-GMP-043-023	F1K220453-018	Soil	X
06-PD1-GMP-043-024	F1K220453-019	Soil	X
06-PD1-GMP-043-025	F1K220453-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K220453 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 37-50 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-043-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K220453

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1K220455
SAMPLING DATE(S): April 02, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-021-001	F1K220455-001	Soil	X
06-PD1-GMP-021-002	F1K220455-002	Soil	X
06-PD1-GMP-021-003	F1K220455-003	Soil	X
06-PD1-GMP-021-004	F1K220455-004	Soil	X
06-PD1-GMP-021-005	F1K220455-005	Soil	X
06-PD1-GMP-021-006	F1K220455-006	Soil	X
06-PD1-GMP-021-007	F1K220455-007	Soil	X
06-PD1-GMP-021-008	F1K220455-008	Soil	X
06-PD1-GMP-021-009	F1K220455-009	Soil	X
06-PD1-GMP-021-010	F1K220455-010	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K220455 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 55 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-021-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K220455

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 13, 2012
SDG NUMBER: F1K280413
SAMPLING DATE(S): October 10, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-067-001	F1K280413-001	Soil	X
06-PD1-GMP-067-002	F1K280413-002	Soil	X
06-PD1-GMP-067-003	F1K280413-003	Soil	X
06-PD1-GMP-067-004	F1K280413-004	Soil	X
06-PD1-GMP-067-005	F1K280413-005	Soil	X
06-PD1-GMP-067-006	F1K280413-006	Soil	X
06-PD1-GMP-067-007	F1K280413-007	Soil	X
06-PD1-GMP-067-008	F1K280413-008	Soil	X
06-PD1-GMP-067-009	F1K280413-009	Soil	X
06-PD1-GMP-067-010	F1K280413-010	Soil	X
06-PD1-GMP-067-011	F1K280413-011	Soil	X
06-PD1-GMP-067-012	F1K280413-012	Soil	X
06-PD1-GMP-067-013	F1K280413-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-067-014	F1K280413-014	Soil	X
06-PD1-GMP-067-015	F1K280413-015	Soil	X
06-PD1-GMP-067-016	F1K280413-016	Soil	X
06-PD1-GMP-067-017	F1K280413-017	Soil	X
06-PD1-GMP-067-018	F1K280413-018	Soil	X
06-PD1-GMP-067-019	F1K280413-019	Soil	X
06-PD1-GMP-067-020	F1K280413-020	Soil	X
06-PD1-GMP-067-021	F1K280413-021	Soil	X
06-PD1-GMP-067-022	F1K280413-022	Soil	X
06-PD1-GMP-067-023	F1K280413-023	Soil	X
06-PD1-GMP-067-024	F1K280413-024	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280413 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank criteria for batch 1333120 met laboratory requirements. No data qualification was necessary.

The blank activity for batch 1333116 exceeded the 2.58 laboratory QC limit in method blank F1K290000-116B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.140 pCi/g	0.0635 pCi/g	4.41

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-067-001	1.03	Fail
06-PD1-GMP-067-002	0.83	Fail
06-PD1-GMP-067-003	1.93	Fail
06-PD1-GMP-067-004	1.44	Fail
06-PD1-GMP-067-005	2.59	Pass
06-PD1-GMP-067-006	1.58	Fail
06-PD1-GMP-067-007	0.66	Fail
06-PD1-GMP-067-008	1.72	Fail
06-PD1-GMP-067-009	2.47	Fail
06-PD1-GMP-067-010	3.12	Pass
06-PD1-GMP-067-011	2.22	Fail
06-PD1-GMP-067-012	3.10	Pass
06-PD1-GMP-067-013	3.67	Pass
06-PD1-GMP-067-014	2.42	Fail
06-PD1-GMP-067-015	4.12	Pass
06-PD1-GMP-067-016	4.04	Pass
06-PD1-GMP-067-017	3.81	Pass
06-PD1-GMP-067-018	3.58	Pass
06-PD1-GMP-067-019	2.68	Pass
06-PD1-GMP-067-020	3.11	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-067-001 and 06-PD1-GMP-067-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K280413

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-067-001	F1K280413-001	Lead-214	B6	J
06-PD1-GMP-067-002	F1K280413-002	Lead-214	B6	J
06-PD1-GMP-067-003	F1K280413-003	Lead-214	B6	J
06-PD1-GMP-067-004	F1K280413-004	Lead-214	B6	J
06-PD1-GMP-067-006	F1K280413-006	Lead-214	B6	J
06-PD1-GMP-067-007	F1K280413-007	Lead-214	B6	J
06-PD1-GMP-067-008	F1K280413-008	Lead-214	B6	J
06-PD1-GMP-067-009	F1K280413-009	Lead-214	B6	J
06-PD1-GMP-067-011	F1K280413-011	Lead-214	B6	J
06-PD1-GMP-067-014	F1K280413-014	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 13, 2012
SDG NUMBER: F1K280415
SAMPLING DATE(S): April 19, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-066-002	F1K280415-001	Soil	X
06-PD1-GMP-066-004	F1K280415-002	Soil	X
06-PD1-GMP-066-005	F1K280415-003	Soil	X
06-PD1-GMP-066-007	F1K280415-004	Soil	X
06-PD1-GMP-066-010	F1K280415-005	Soil	X
06-PD1-GMP-066-012	F1K280415-006	Soil	X
06-PD1-GMP-066-015	F1K280415-007	Soil	X
06-PD1-GMP-066-017	F1K280415-008	Soil	X
06-PD1-GMP-066-018	F1K280415-009	Soil	X
06-PD1-GMP-066-020	F1K280415-010	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280415 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criterion of 180 days by 45-46 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-066-002 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1K280415

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1K280421
SAMPLING DATE(S): October 10, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-068-001	F1K280421-001	Soil	X
06-PD1-GMP-068-002	F1K280421-002	Soil	X
06-PD1-GMP-068-003	F1K280421-003	Soil	X
06-PD1-GMP-068-004	F1K280421-004	Soil	X
06-PD1-GMP-068-005	F1K280421-005	Soil	X
06-PD1-GMP-068-006	F1K280421-006	Soil	X
06-PD1-GMP-068-007	F1K280421-007	Soil	X
06-PD1-GMP-068-008	F1K280421-008	Soil	X
06-PD1-GMP-068-009	F1K280421-009	Soil	X
06-PD1-GMP-068-010	F1K280421-010	Soil	X
06-PD1-GMP-068-011	F1K280421-011	Soil	X
06-PD1-GMP-068-012	F1K280421-012	Soil	X
06-PD1-GMP-068-013	F1K280421-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-068-014	F1K280421-014	Soil	X
06-PD1-GMP-068-015	F1K280421-015	Soil	X
06-PD1-GMP-068-016	F1K280421-016	Soil	X
06-PD1-GMP-068-017	F1K280421-017	Soil	X
06-PD1-GMP-068-018	F1K280421-018	Soil	X
06-PD1-GMP-068-019	F1K280421-019	Soil	X
06-PD1-GMP-068-020	F1K280421-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280421 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1K290000-119B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0980 pCi/g	0.0634 pCi/g	3.09

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-068-001	2.59	Pass
06-PD1-GMP-068-002	2.09	Fail
06-PD1-GMP-068-003	1.90	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-068-004	2.30	Fail
06-PD1-GMP-068-005	2.40	Fail
06-PD1-GMP-068-006	2.68	Pass
06-PD1-GMP-068-007	2.66	Pass
06-PD1-GMP-068-008	3.71	Pass
06-PD1-GMP-068-009	3.26	Pass
06-PD1-GMP-068-010	2.52	Fail
06-PD1-GMP-068-011	3.64	Pass
06-PD1-GMP-068-012	3.46	Pass
06-PD1-GMP-068-013	3.22	Pass
06-PD1-GMP-068-014	3.16	Pass
06-PD1-GMP-068-015	3.55	Pass
06-PD1-GMP-068-016	3.81	Pass
06-PD1-GMP-068-017	3.55	Pass
06-PD1-GMP-068-018	3.43	Pass
06-PD1-GMP-068-019	3.83	Pass
06-PD1-GMP-068-020	3.82	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-068-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K280421

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-068-002	F1K280421-002	Lead-214	B6	J
06-PD1-GMP-068-003	F1K280421-003	Lead-214	B6	J
06-PD1-GMP-068-004	F1K280421-004	Lead-214	B6	J
06-PD1-GMP-068-005	F1K280421-005	Lead-214	B6	J
06-PD1-GMP-068-010	F1K280421-010	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1K280422
SAMPLING DATE(S): October 07, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-070-001	F1K280422-001	Soil	X
06-PD1-GMP-070-002	F1K280422-002	Soil	X
06-PD1-GMP-070-003	F1K280422-003	Soil	X
06-PD1-GMP-070-004	F1K280422-004	Soil	X
06-PD1-GMP-070-005	F1K280422-005	Soil	X
06-PD1-GMP-070-006	F1K280422-006	Soil	X
06-PD1-GMP-070-007	F1K280422-007	Soil	X
06-PD1-GMP-070-008	F1K280422-008	Soil	X
06-PD1-GMP-070-009	F1K280422-009	Soil	X
06-PD1-GMP-070-010	F1K280422-010	Soil	X
06-PD1-GMP-070-011	F1K280422-011	Soil	X
06-PD1-GMP-070-012	F1K280422-012	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-070-013	F1K280422-013	Soil	X
06-PD1-GMP-070-014	F1K280422-014	Soil	X
06-PD1-GMP-070-015	F1K280422-015	Soil	X
06-PD1-GMP-070-016	F1K280422-016	Soil	X
06-PD1-GMP-070-017	F1K280422-017	Soil	X
06-PD1-GMP-070-018	F1K280422-018	Soil	X
06-PD1-GMP-070-019	F1K280422-019	Soil	X
06-PD1-GMP-070-020	F1K280422-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280422 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1K290000-115B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.107 pCi/g	0.0668 pCi/g	3.20

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-070-001	3.51	Pass
06-PD1-GMP-070-002	3.39	Pass
06-PD1-GMP-070-003	2.06	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-070-004	2.80	Pass
06-PD1-GMP-070-005	2.85	Pass
06-PD1-GMP-070-006	3.41	Pass
06-PD1-GMP-070-007	3.20	Pass
06-PD1-GMP-070-008	3.52	Pass
06-PD1-GMP-070-009	3.11	Pass
06-PD1-GMP-070-010	2.79	Pass
06-PD1-GMP-070-011	3.06	Pass
06-PD1-GMP-070-012	3.52	Pass
06-PD1-GMP-070-013	4.14	Pass
06-PD1-GMP-070-014	3.67	Pass
06-PD1-GMP-070-015	2.92	Pass
06-PD1-GMP-070-016	3.08	Pass
06-PD1-GMP-070-017	4.19	Pass
06-PD1-GMP-070-018	3.59	Pass
06-PD1-GMP-070-019	3.60	Pass
06-PD1-GMP-070-020	3.46	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-070-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K280422

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-070-003	F1K280422-003	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1K280423
SAMPLING DATE(S): October 13, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-071-001	F1K280423-001	Soil	X
06-PD1-GMP-071-002	F1K280423-002	Soil	X
06-PD1-GMP-071-003	F1K280423-003	Soil	X
06-PD1-GMP-071-004	F1K280423-004	Soil	X
06-PD1-GMP-071-005	F1K280423-005	Soil	X
06-PD1-GMP-071-006	F1K280423-006	Soil	X
06-PD1-GMP-071-007	F1K280423-007	Soil	X
06-PD1-GMP-071-008	F1K280423-008	Soil	X
06-PD1-GMP-071-009	F1K280423-009	Soil	X
06-PD1-GMP-071-010	F1K280423-010	Soil	X
06-PD1-GMP-071-011	F1K280423-011	Soil	X
06-PD1-GMP-071-012	F1K280423-012	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-071-013	F1K280423-013	Soil	X
06-PD1-GMP-071-014	F1K280423-014	Soil	X
06-PD1-GMP-071-015	F1K280423-015	Soil	X
06-PD1-GMP-071-016	F1K280423-016	Soil	X
06-PD1-GMP-071-017	F1K280423-017	Soil	X
06-PD1-GMP-071-018	F1K280423-018	Soil	X
06-PD1-GMP-071-019	F1K280423-019	Soil	X
06-PD1-GMP-071-020	F1K280423-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280423 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-071-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K280423

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1K280425
SAMPLING DATE(S): October 12, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-072-001	F1K280425-001	Soil	X
06-PD1-GMP-072-002	F1K280425-002	Soil	X
06-PD1-GMP-072-003	F1K280425-003	Soil	X
06-PD1-GMP-072-004	F1K280425-004	Soil	X
06-PD1-GMP-072-005	F1K280425-005	Soil	X
06-PD1-GMP-072-006	F1K280425-006	Soil	X
06-PD1-GMP-072-007	F1K280425-007	Soil	X
06-PD1-GMP-072-008	F1K280425-008	Soil	X
06-PD1-GMP-072-009	F1K280425-009	Soil	X
06-PD1-GMP-072-010	F1K280425-010	Soil	X
06-PD1-GMP-072-011	F1K280425-011	Soil	X
06-PD1-GMP-072-012	F1K280425-012	Soil	X
06-PD1-GMP-072-013	F1K280425-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-072-014	F1K280425-014	Soil	X
06-PD1-GMP-072-015	F1K280425-015	Soil	X
06-PD1-GMP-072-016	F1K280425-016	Soil	X
06-PD1-GMP-072-017	F1K280425-017	Soil	X
06-PD1-GMP-072-018	F1K280425-018	Soil	X
06-PD1-GMP-072-019	F1K280425-019	Soil	X
06-PD1-GMP-072-020	F1K280425-020	Soil	X
06-PD1-GMP-072-021	F1K280425-021	Soil	X
06-PD1-GMP-072-022	F1K280425-022	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280425 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank criteria for batch 1333120 met laboratory requirements. No data qualification was necessary.

The blank activity for batch 1333108 exceeded the 2.58 laboratory QC limit in method blank F1K290000-108B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0886 pCi/g	0.0683 pCi/g	2.59

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-072-001	2.10	Fail
06-PD1-GMP-072-002	3.31	Pass
06-PD1-GMP-072-003	3.65	Pass
06-PD1-GMP-072-004	2.52	Fail
06-PD1-GMP-072-005	3.29	Pass
06-PD1-GMP-072-006	2.93	Pass
06-PD1-GMP-072-007	2.93	Pass
06-PD1-GMP-072-008	3.26	Pass
06-PD1-GMP-072-009	1.33	Fail
06-PD1-GMP-072-010	3.80	Pass
06-PD1-GMP-072-011	4.10	Pass
06-PD1-GMP-072-012	2.16	Fail
06-PD1-GMP-072-013	3.30	Pass
06-PD1-GMP-072-014	3.61	Pass
06-PD1-GMP-072-015	3.56	Pass
06-PD1-GMP-072-016	3.51	Pass
06-PD1-GMP-072-017	3.44	Pass
06-PD1-GMP-072-018	3.15	Pass
06-PD1-GMP-072-019	2.64	Pass
06-PD1-GMP-072-020	2.86	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-072-001 of this SDG and 06-PD1-GMP-067-021 of SDG F1K280413. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K280425

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-072-001	F1K280425-001	Lead-214	B6	J
06-PD1-GMP-072-004	F1K280425-004	Lead-214	B6	J
06-PD1-GMP-072-009	F1K280425-009	Lead-214	B6	J
06-PD1-GMP-072-012	F1K280425-012	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1K280430
SAMPLING DATE(S): October 11, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-066-021	F1K280430-001	Soil	X
06-PD1-GMP-066-022	F1K280430-002	Soil	X
06-PD1-GMP-066-023	F1K280430-003	Soil	X
06-PD1-GMP-066-024	F1K280430-004	Soil	X
06-PD1-GMP-066-025	F1K280430-005	Soil	X
06-PD1-GMP-066-026	F1K280430-006	Soil	X
06-PD1-GMP-066-027	F1K280430-007	Soil	X
06-PD1-GMP-066-028	F1K280430-008	Soil	X
06-PD1-GMP-066-029	F1K280430-009	Soil	X
06-PD1-GMP-066-030	F1K280430-010	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280430 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-066-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K280430

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1K280431
SAMPLING DATE(S): October 13, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-048-012	F1K280431-001	Soil	X
06-PD1-GMP-048-018	F1K280431-002	Soil	X
06-PD1-GMP-048-023	F1K280431-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K280431 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-048-012 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K280431

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1K290409
SAMPLING DATE(S): April 20, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-044-001	F1K290409-001	Soil	X
06-PD1-GMP-044-002	F1K290409-002	Soil	X
06-PD1-GMP-044-003	F1K290409-003	Soil	X
06-PD1-GMP-044-004	F1K290409-004	Soil	X
06-PD1-GMP-044-005	F1K290409-005	Soil	X
06-PD1-GMP-044-006	F1K290409-006	Soil	X
06-PD1-GMP-044-007	F1K290409-007	Soil	X
06-PD1-GMP-044-008	F1K290409-008	Soil	X
06-PD1-GMP-044-009	F1K290409-009	Soil	X
06-PD1-GMP-044-010	F1K290409-010	Soil	X
06-PD1-GMP-044-011	F1K290409-011	Soil	X
06-PD1-GMP-044-012	F1K290409-012	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290409 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 44-45 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1K300000-043B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.103 pCi/g	0.0746 pCi/g	2.77

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-044-001	2.62	Pass
06-PD1-GMP-044-002	3.07	Pass
06-PD1-GMP-044-003	2.50	Fail
06-PD1-GMP-044-004	3.03	Pass
06-PD1-GMP-044-005	3.74	Pass
06-PD1-GMP-044-006	2.91	Pass
06-PD1-GMP-044-007	2.00	Fail
06-PD1-GMP-044-008	3.33	Pass
06-PD1-GMP-044-009	2.46	Fail
06-PD1-GMP-044-010	3.41	Pass
06-PD1-GMP-044-011	3.43	Pass
06-PD1-GMP-044-012	3.27	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-044-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K290409

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-044-003	F1K290409-003	Lead-214	B6	J
06-PD1-GMP-044-007	F1K290409-007	Lead-214	B6	J
06-PD1-GMP-044-009	F1K290409-009	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1K290411
SAMPLING DATE(S): October 11, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-044-021	F1K290411-001	Soil	X
06-PD1-GMP-044-022	F1K290411-002	Soil	X
06-PD1-GMP-044-023	F1K290411-003	Soil	X
06-PD1-GMP-044-024	F1K290411-004	Soil	X
06-PD1-GMP-044-025	F1K290411-005	Soil	X
06-PD1-GMP-044-026	F1K290411-006	Soil	X
06-PD1-GMP-044-027	F1K290411-007	Soil	X
06-PD1-GMP-044-028	F1K290411-008	Soil	X
06-PD1-GMP-045-021	F1K290411-009	Soil	X
06-PD1-GMP-045-022	F1K290411-010	Soil	X
06-PD1-GMP-045-023	F1K290411-011	Soil	X
06-PD1-GMP-045-024	F1K290411-012	Soil	X
06-PD1-GMP-045-025	F1K290411-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-045-026	F1K290411-014	Soil	X
06-PD1-GMP-045-027	F1K290411-015	Soil	X
06-PD1-GMP-045-028	F1K290411-016	Soil	X
06-PD1-GMP-045-029	F1K290411-017	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290411 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-044-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K290411

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1K290412
SAMPLING DATE(S): April 20, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-045-013	F1K290412-001	Soil	X
06-PD1-GMP-045-001	F1K290412-002	Soil	X
06-PD1-GMP-045-002	F1K290412-003	Soil	X
06-PD1-GMP-045-003	F1K290412-004	Soil	X
06-PD1-GMP-045-004	F1K290412-005	Soil	X
06-PD1-GMP-045-005	F1K290412-006	Soil	X
06-PD1-GMP-045-007	F1K290412-007	Soil	X
06-PD1-GMP-045-008	F1K290412-008	Soil	X
06-PD1-GMP-045-009	F1K290412-009	Soil	X
06-PD1-GMP-045-010	F1K290412-010	Soil	X
06-PD1-GMP-045-012	F1K290412-011	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290412 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 45-49 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1K300000-045B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.134 pCi/g	0.0895 pCi/g	2.99

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-045-013	1.70	Fail
06-PD1-GMP-045-001	1.03	Fail
06-PD1-GMP-045-002	2.26	Fail
06-PD1-GMP-045-003	3.42	Pass
06-PD1-GMP-045-004	1.11	Fail
06-PD1-GMP-045-005	0.67	Fail
06-PD1-GMP-045-007	1.64	Fail
06-PD1-GMP-045-008	2.51	Fail
06-PD1-GMP-045-009	2.12	Fail
06-PD1-GMP-045-010	1.51	Fail
06-PD1-GMP-045-012	3.92	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-045-013 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K290412

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-045-013	F1K290412-001	Lead-214	B6	J
06-PD1-GMP-045-001	F1K290412-002	Lead-214	B6	J
06-PD1-GMP-045-002	F1K290412-003	Lead-214	B6	J
06-PD1-GMP-045-004	F1K290412-005	Lead-214	B6	J
06-PD1-GMP-045-005	F1K290412-006	Lead-214	B6	J
06-PD1-GMP-045-007	F1K290412-007	Lead-214	B6	J
06-PD1-GMP-045-008	F1K290412-008	Lead-214	B6	J
06-PD1-GMP-045-009	F1K290412-009	Lead-214	B6	J
06-PD1-GMP-045-010	F1K290412-010	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1K290414
SAMPLING DATE(S): October 13, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-048-001	F1K290414-001	Soil	X
06-PD1-GMP-048-002	F1K290414-002	Soil	X
06-PD1-GMP-048-003	F1K290414-003	Soil	X
06-PD1-GMP-048-004	F1K290414-004	Soil	X
06-PD1-GMP-048-005	F1K290414-005	Soil	X
06-PD1-GMP-048-006	F1K290414-006	Soil	X
06-PD1-GMP-048-007	F1K290414-007	Soil	X
06-PD1-GMP-048-008	F1K290414-008	Soil	X
06-PD1-GMP-048-009	F1K290414-009	Soil	X
06-PD1-GMP-048-010	F1K290414-010	Soil	X
06-PD1-GMP-048-011	F1K290414-011	Soil	X
06-PD1-GMP-048-012	F1K290414-012	Soil	X
06-PD1-GMP-048-013	F1K290414-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-048-014	F1K290414-014	Soil	X
06-PD1-GMP-048-015	F1K290414-015	Soil	X
06-PD1-GMP-048-016	F1K290414-016	Soil	X
06-PD1-GMP-048-017	F1K290414-017	Soil	X
06-PD1-GMP-048-018	F1K290414-018	Soil	X
06-PD1-GMP-048-019	F1K290414-019	Soil	X
06-PD1-GMP-048-020	F1K290414-020	Soil	X
06-PD1-GMP-048-021	F1K290414-021	Soil	X
06-PD1-GMP-048-022	F1K290414-022	Soil	X
06-PD1-GMP-048-023	F1K290414-023	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290414- Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-048-001 and 06-PD1-GMP-048-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K290414

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1K290415
SAMPLING DATE(S): October 10, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-069-001	F1K290415-001	Soil	X
06-PD1-GMP-069-002	F1K290415-002	Soil	X
06-PD1-GMP-069-003	F1K290415-003	Soil	X
06-PD1-GMP-069-004	F1K290415-004	Soil	X
06-PD1-GMP-069-005	F1K290415-005	Soil	X
06-PD1-GMP-069-006	F1K290415-006	Soil	X
06-PD1-GMP-069-007	F1K290415-007	Soil	X
06-PD1-GMP-069-008	F1K290415-008	Soil	X
06-PD1-GMP-069-009	F1K290415-009	Soil	X
06-PD1-GMP-069-010	F1K290415-010	Soil	X
06-PD1-GMP-069-011	F1K290415-011	Soil	X
06-PD1-GMP-069-012	F1K290415-012	Soil	X
06-PD1-GMP-069-013	F1K290415-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-069-014	F1K290415-014	Soil	X
06-PD1-GMP-069-015	F1K290415-015	Soil	X
06-PD1-GMP-069-016	F1K290415-016	Soil	X
06-PD1-GMP-069-017	F1K290415-017	Soil	X
06-PD1-GMP-069-018	F1K290415-018	Soil	X
06-PD1-GMP-069-019	F1K290415-019	Soil	X
06-PD1-GMP-069-020	F1K290415-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290415 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-069-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K290415

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1K290418
SAMPLING DATE(S): October 12, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-049-001	F1K290418-001	Soil	X
06-PD1-GMP-049-002	F1K290418-002	Soil	X
06-PD1-GMP-049-003	F1K290418-003	Soil	X
06-PD1-GMP-049-004	F1K290418-004	Soil	X
06-PD1-GMP-049-005	F1K290418-005	Soil	X
06-PD1-GMP-049-006	F1K290418-006	Soil	X
06-PD1-GMP-049-007	F1K290418-007	Soil	X
06-PD1-GMP-049-008	F1K290418-008	Soil	X
06-PD1-GMP-049-009	F1K290418-009	Soil	X
06-PD1-GMP-049-010	F1K290418-010	Soil	X
06-PD1-GMP-049-011	F1K290418-011	Soil	X
06-PD1-GMP-049-012	F1K290418-012	Soil	X
06-PD1-GMP-049-013	F1K290418-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-049-014	F1K290418-014	Soil	X
06-PD1-GMP-049-015	F1K290418-015	Soil	X
06-PD1-GMP-049-016	F1K290418-016	Soil	X
06-PD1-GMP-049-017	F1K290418-017	Soil	X
06-PD1-GMP-049-018	F1K290418-018	Soil	X
06-PD1-GMP-049-019	F1K290418-019	Soil	X
06-PD1-GMP-049-020	F1K290418-020	Soil	X
06-PD1-GMP-049-021	F1K290418-021	Soil	X
06-PD1-GMP-049-022	F1K290418-022	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290418- Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-049-001 of this SDG and 06-PD1-GMP-048-021 of SDG F1K290414. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K290418

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1K290420
SAMPLING DATE(S): October 12, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-046-001	F1K290420-001	Soil	X
06-PD1-GMP-046-002	F1K290420-002	Soil	X
06-PD1-GMP-046-003	F1K290420-003	Soil	X
06-PD1-GMP-046-004	F1K290420-004	Soil	X
06-PD1-GMP-046-005	F1K290420-005	Soil	X
06-PD1-GMP-046-006	F1K290420-006	Soil	X
06-PD1-GMP-046-007	F1K290420-007	Soil	X
06-PD1-GMP-046-008	F1K290420-008	Soil	X
06-PD1-GMP-046-009	F1K290420-009	Soil	X
06-PD1-GMP-046-010	F1K290420-010	Soil	X
06-PD1-GMP-046-011	F1K290420-011	Soil	X
06-PD1-GMP-046-012	F1K290420-012	Soil	X
06-PD1-GMP-046-013	F1K290420-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-046-014	F1K290420-014	Soil	X
06-PD1-GMP-046-015	F1K290420-015	Soil	X
06-PD1-GMP-046-016	F1K290420-016	Soil	X
06-PD1-GMP-046-017	F1K290420-017	Soil	X
06-PD1-GMP-046-018	F1K290420-018	Soil	X
06-PD1-GMP-046-019	F1K290420-019	Soil	X
06-PD1-GMP-046-020	F1K290420-020	Soil	X
06-PD1-GMP-046-021	F1K290420-021	Soil	X
06-PD1-GMP-046-022	F1K290420-022	Soil	X
06-PD1-GMP-046-023	F1K290420-023	Soil	X
06-PD1-GMP-046-024	F1K290420-024	Soil	X
06-PD1-GMP-046-025	F1K290420-025	Soil	X
06-PD1-GMP-046-026	F1K290420-026	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290420- Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-046-001 of this SDG and 06-PD1-GMP-048-021 of SDG F1K290414. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1K290420

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1K290426
SAMPLING DATE(S): April 20, 2011 - October 12, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-043-006	F1K290426-001	Soil	X
06-PD1-GMP-043-008	F1K290426-002	Soil	X
06-PD1-GMP-043-013	F1K290426-003	Soil	X
06-PD1-GMP-044-003	F1K290426-004	Soil	X
06-PD1-GMP-044-010	F1K290426-005	Soil	X
06-PD1-GMP-044-024	F1K290426-006	Soil	X
06-PD1-GMP-045-001	F1K290426-007	Soil	X
06-PD1-GMP-045-012	F1K290426-008	Soil	X
06-PD1-GMP-045-026	F1K290426-009	Soil	X
06-PD1-GMP-046-005	F1K290426-010	Soil	X
06-PD1-GMP-046-018	F1K290426-011	Soil	X
06-PD1-GMP-046-025	F1K290426-012	Soil	X
06-PD1-GMP-049-007	F1K290426-013	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-049-008	F1K290426-014	Soil	X
06-PD1-GMP-049-016	F1K290426-015	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1K290426 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates (7 samples) exceeded the laboratory holding time criteria of 180 days by 60-63 days. Due to the relatively long half-lives of the analytes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-043-006 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1K290426

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1L070451
SAMPLING DATE(S): October 10, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-050-001	F1L070451-001	Soil	X
06-PD1-GMP-050-002	F1L070451-002	Soil	X
06-PD1-GMP-050-003	F1L070451-003	Soil	X
06-PD1-GMP-050-004	F1L070451-004	Soil	X
06-PD1-GMP-050-005	F1L070451-005	Soil	X
06-PD1-GMP-050-006	F1L070451-006	Soil	X
06-PD1-GMP-050-007	F1L070451-007	Soil	X
06-PD1-GMP-050-008	F1L070451-008	Soil	X
06-PD1-GMP-050-009	F1L070451-009	Soil	X
06-PD1-GMP-050-010	F1L070451-010	Soil	X
06-PD1-GMP-050-011	F1L070451-011	Soil	X
06-PD1-GMP-050-012	F1L070451-012	Soil	X
06-PD1-GMP-050-013	F1L070451-013	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-GMP-050-014	F1L070451-014	Soil	X
06-PD1-GMP-050-015	F1L070451-015	Soil	X
06-PD1-GMP-050-016	F1L070451-016	Soil	X
06-PD1-GMP-050-017	F1L070451-017	Soil	X
06-PD1-GMP-050-018	F1L070451-018	Soil	X
06-PD1-GMP-050-019	F1L070451-019	Soil	X
06-PD1-GMP-050-020	F1L070451-020	Soil	X
06-PD1-GMP-050-021	F1L070451-021	Soil	X
06-PD1-GMP-050-022	F1L070451-022	Soil	X
06-PD1-GMP-050-023	F1L070451-023	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L070451- Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-050-001 and 06-PD1-GMP-050-021 of this SDG F1K290414. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L070451

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

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www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1L070459
SAMPLING DATE(S): October 10, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-050-007	F1L070459-001	Soil	X
06-PD1-GMP-050-009	F1L070459-002	Soil	X
06-PD1-GMP-050-019	F1L070459-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L070459 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1L070457-001 of SDG F1L070457. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L070459

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1L120460
SAMPLING DATE(S): November 09, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-020-109	F1L120460-001	Soil	X
06-PD1-GMP-020-114	F1L120460-002	Soil	X
06-PD1-GMP-020-118	F1L120460-003	Soil	X
06-PD1-GMP-012-114	F1L120460-006	Soil	X
06-PD1-GMP-012-119	F1L120460-007	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L120460 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F1L120455-001 of SDG F1L120455. Both Strontium-90 results were non-detected; therefore, precision criterion was not evaluated. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L120460

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1L120464
SAMPLING DATE(S): November 09, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-012-101	F1L120464-001	Soil	X
06-PD1-GMP-012-102	F1L120464-002	Soil	X
06-PD1-GMP-012-103	F1L120464-003	Soil	X
06-PD1-GMP-012-104	F1L120464-004	Soil	X
06-PD1-GMP-012-105	F1L120464-005	Soil	X
06-PD1-GMP-012-106	F1L120464-006	Soil	X
06-PD1-GMP-012-107	F1L120464-007	Soil	X
06-PD1-GMP-012-108	F1L120464-008	Soil	X
06-PD1-GMP-012-109	F1L120464-009	Soil	X
06-PD1-GMP-012-110	F1L120464-010	Soil	X
06-PD1-GMP-012-111	F1L120464-011	Soil	X
06-PD1-GMP-012-112	F1L120464-012	Soil	X
06-PD1-GMP-012-113	F1L120464-013	Soil	X
06-PD1-GMP-012-114	F1L120464-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-012-115	F1L120464-015	Soil	X
06-PD1-GMP-012-116	F1L120464-016	Soil	X
06-PD1-GMP-012-117	F1L120464-017	Soil	X
06-PD1-GMP-012-118	F1L120464-018	Soil	X
06-PD1-GMP-012-119	F1L120464-019	Soil	X
06-PD1-GMP-012-120	F1L120464-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L120464 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-012-101 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L120464

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F1L120465
SAMPLING DATE(S): April 16, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-052-001	F1L120465-001	Soil	X
06-PD1-GMP-052-002	F1L120465-002	Soil	X
06-PD1-GMP-052-003	F1L120465-003	Soil	X
06-PD1-GMP-052-004	F1L120465-004	Soil	X
06-PD1-GMP-052-005	F1L120465-005	Soil	X
06-PD1-GMP-052-006	F1L120465-006	Soil	X
06-PD1-GMP-052-007	F1L120465-007	Soil	X
06-PD1-GMP-052-008	F1L120465-008	Soil	X
06-PD1-GMP-052-009	F1L120465-009	Soil	X
06-PD1-GMP-052-010	F1L120465-010	Soil	X
06-PD1-GMP-052-011	F1L120465-011	Soil	X
06-PD1-GMP-052-012	F1L120465-012	Soil	X
06-PD1-GMP-052-013	F1L120465-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-052-014	F1L120465-014	Soil	X
06-PD1-GMP-052-015	F1L120465-015	Soil	X
06-PD1-GMP-052-016	F1L120465-016	Soil	X
06-PD1-GMP-052-017	F1L120465-017	Soil	X
06-PD1-GMP-052-018	F1L120465-018	Soil	X
06-PD1-GMP-052-019	F1L120465-019	Soil	X
06-PD1-GMP-052-020	F1L120465-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L120465 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 62-68 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1L130000-156B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.105 pCi/g	0.0763 pCi/g	2.75

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J). Non-detected results did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-052-001	1.38	Fail
06-PD1-GMP-052-002	2.91	Pass
06-PD1-GMP-052-003	2.41	Fail
06-PD1-GMP-052-004	2.39	Fail
06-PD1-GMP-052-005	3.61	Pass
06-PD1-GMP-052-006	1.91	Fail
06-PD1-GMP-052-007	3.20	Pass
06-PD1-GMP-052-008	2.89	Pass
06-PD1-GMP-052-009	2.76	Pass
06-PD1-GMP-052-010	2.79	Pass
06-PD1-GMP-052-011	non-detect	N/A
06-PD1-GMP-052-012	3.03	Pass
06-PD1-GMP-052-013	1.67	Fail
06-PD1-GMP-052-014	2.12	Fail
06-PD1-GMP-052-015	3.54	Pass
06-PD1-GMP-052-016	2.97	Pass
06-PD1-GMP-052-017	2.77	Pass
06-PD1-GMP-052-018	2.08	Fail
06-PD1-GMP-052-019	non-detect	N/A
06-PD1-GMP-052-020	3.58	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-052-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L120465

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-052-001	F1L120465-001	Lead-214	B6	J
06-PD1-GMP-052-003	F1L120465-003	Lead-214	B6	J
06-PD1-GMP-052-004	F1L120465-004	Lead-214	B6	J
06-PD1-GMP-052-006	F1L120465-006	Lead-214	B6	J
06-PD1-GMP-052-013	F1L120465-013	Lead-214	B6	J
06-PD1-GMP-052-014	F1L120465-014	Lead-214	B6	J
06-PD1-GMP-052-018	F1L120465-018	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1L120467
SAMPLING DATE(S): March 05, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-018-001	F1L120467-001	Soil	X
06-PD1-GMP-018-002	F1L120467-002	Soil	X
06-PD1-GMP-018-003	F1L120467-003	Soil	X
06-PD1-GMP-018-004	F1L120467-004	Soil	X
06-PD1-GMP-018-005	F1L120467-005	Soil	X
06-PD1-GMP-018-006	F1L120467-006	Soil	X
06-PD1-GMP-018-007	F1L120467-007	Soil	X
06-PD1-GMP-018-008	F1L120467-008	Soil	X
06-PD1-GMP-018-009	F1L120467-009	Soil	X
06-PD1-GMP-018-010	F1L120467-010	Soil	X
06-PD1-GMP-018-011	F1L120467-011	Soil	X
06-PD1-GMP-018-012	F1L120467-012	Soil	X
06-PD1-GMP-018-013	F1L120467-013	Soil	X
06-PD1-GMP-018-014	F1L120467-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-018-015	F1L120467-015	Soil	X
06-PD1-GMP-018-016	F1L120467-016	Soil	X
06-PD1-GMP-018-017	F1L120467-017	Soil	X
06-PD1-GMP-018-018	F1L120467-018	Soil	X
06-PD1-GMP-018-019	F1L120467-019	Soil	X
06-PD1-GMP-018-020	F1L120467-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L120467 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 105-119 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1L140000-092B for the following isotopes:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Bismuth-214	0.1107 pCi/g	0.0720 pCi/g	3.08
Radium-226	0.1107 pCi/g	0.0720 pCi/g	3.08

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated detected samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Bi-214</u>		<u>Ra-226</u>	
	<u>Z-DER</u>	<u>Pass/Fail</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-018-001	2.21	Fail	2.21	Fail
06-PD1-GMP-018-002	2.82	Pass	2.82	Pass
06-PD1-GMP-018-003	1.56	Fail	1.56	Fail
06-PD1-GMP-018-004	3.07	Pass	3.07	Pass
06-PD1-GMP-018-005	2.33	Fail	2.33	Fail
06-PD1-GMP-018-006	3.54	Pass	3.54	Pass
06-PD1-GMP-018-007	3.04	Pass	3.04	Pass
06-PD1-GMP-018-008	3.89	Pass	3.89	Pass
06-PD1-GMP-018-009	3.33	Pass	3.33	Pass
06-PD1-GMP-018-010	3.13	Pass	3.13	Pass
06-PD1-GMP-018-011	3.05	Pass	3.05	Pass
06-PD1-GMP-018-012	3.09	Pass	3.09	Pass
06-PD1-GMP-018-013	2.55	Fail	2.55	Fail
06-PD1-GMP-018-014	2.42	Fail	2.42	Fail
06-PD1-GMP-018-015	2.70	Pass	2.70	Pass
06-PD1-GMP-018-016	1.56	Fail	1.56	Fail
06-PD1-GMP-018-017	3.34	Pass	3.34	Pass
06-PD1-GMP-018-018	2.04	Fail	2.04	Fail
06-PD1-GMP-018-019	2.84	Pass	2.84	Pass
06-PD1-GMP-018-020	4.16	Pass	4.16	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-018-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L120467

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-018-001	F1L120467-001	Bismuth-214/Radium-226	B6	J
06-PD1-GMP-018-003	F1L120467-003	Bismuth-214/Radium-226	B6	J
06-PD1-GMP-018-005	F1L120467-005	Bismuth-214/Radium-226	B6	J
06-PD1-GMP-018-013	F1L120467-013	Bismuth-214/Radium-226	B6	J
06-PD1-GMP-018-014	F1L120467-014	Bismuth-214/Radium-226	B6	J
06-PD1-GMP-018-016	F1L120467-016	Bismuth-214/Radium-226	B6	J
06-PD1-GMP-018-018	F1L120467-018	Bismuth-214/Radium-226	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F1L120470
SAMPLING DATE(S): November 09, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-020-101	F1L120470-001	Soil	X
06-PD1-GMP-020-102	F1L120470-002	Soil	X
06-PD1-GMP-020-103	F1L120470-003	Soil	X
06-PD1-GMP-020-104	F1L120470-004	Soil	X
06-PD1-GMP-020-105	F1L120470-005	Soil	X
06-PD1-GMP-020-106	F1L120470-006	Soil	X
06-PD1-GMP-020-107	F1L120470-007	Soil	X
06-PD1-GMP-020-108	F1L120470-008	Soil	X
06-PD1-GMP-020-109	F1L120470-009	Soil	X
06-PD1-GMP-020-110	F1L120470-010	Soil	X
06-PD1-GMP-020-111	F1L120470-011	Soil	X
06-PD1-GMP-020-112	F1L120470-012	Soil	X
06-PD1-GMP-020-113	F1L120470-013	Soil	X
06-PD1-GMP-020-114	F1L120470-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-020-115	F1L120470-015	Soil	X
06-PD1-GMP-020-116	F1L120470-016	Soil	X
06-PD1-GMP-020-117	F1L120470-017	Soil	X
06-PD1-GMP-020-118	F1L120470-018	Soil	X
06-PD1-GMP-020-119	F1L120470-019	Soil	X
06-PD1-GMP-020-120	F1L120470-020	Soil	X
06-PD1-GMP-020-121	F1L120470-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L120470 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-020-101 and 06-PD1-GMP-020-121 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L120470

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F1L140406
SAMPLING DATE(S): April 16, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-052-020	F1L140406-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L140406 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis date exceeded the laboratory holding time criteria of 180 days by 76 days. Due to the relatively long half-lives of the analytes of concern, this exceedance should not adversely affect sample result. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 05-SHAW-PCB-RSYE2-040 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F1L140406

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F1L210479
SAMPLING DATE(S): October 11, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-066-025RE	F1L210479-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F1L210479 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F1L220000-084B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0962 pCi/g	0.0529 pCi/g	3.63

Z_{DER} was calculated to determine the relative difference of the sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample was demonstrated to be significantly different ($Z_{DER} > 2.58$) and did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-066-025RE	4.87	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-066-025RE of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F1L210479

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F2A100460
SAMPLING DATE(S): October 12, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-047-001	F2A100460-001	Soil	X
06-PD1-GMP-047-002	F2A100460-002	Soil	X
06-PD1-GMP-047-003	F2A100460-003	Soil	X
06-PD1-GMP-047-004	F2A100460-004	Soil	X
06-PD1-GMP-047-005	F2A100460-005	Soil	X
06-PD1-GMP-047-006	F2A100460-006	Soil	X
06-PD1-GMP-047-007	F2A100460-007	Soil	X
06-PD1-GMP-047-008	F2A100460-008	Soil	X
06-PD1-GMP-047-009	F2A100460-009	Soil	X
06-PD1-GMP-047-010	F2A100460-010	Soil	X
06-PD1-GMP-047-011	F2A100460-011	Soil	X
06-PD1-GMP-047-012	F2A100460-012	Soil	X
06-PD1-GMP-047-013	F2A100460-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-047-014	F2A100460-014	Soil	X
06-PD1-GMP-047-015	F2A100460-015	Soil	X
06-PD1-GMP-047-016	F2A100460-016	Soil	X
06-PD1-GMP-047-017	F2A100460-017	Soil	X
06-PD1-GMP-047-018	F2A100460-018	Soil	X
06-PD1-GMP-047-019	F2A100460-019	Soil	X
06-PD1-GMP-047-020	F2A100460-020	Soil	X
06-PD1-GMP-047-021	F2A100460-021	Soil	X
06-PD1-GMP-047-022	F2A100460-022	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A100460 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2A130000-035B (batch 2013035) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.188 pCi/g	0.0789 pCi/g	4.77

Z_{DER} was calculated to determine the relative difference of sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample that was demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-047-001	2.01	Fail
06-PD1-GMP-047-002	3.39	Pass
06-PD1-GMP-047-003	2.37	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-047-004	2.95	Pass
06-PD1-GMP-047-005	2.71	Pass
06-PD1-GMP-047-006	3.08	Pass
06-PD1-GMP-047-007	2.58	Pass
06-PD1-GMP-047-008	3.31	Pass
06-PD1-GMP-047-009	2.61	Pass
06-PD1-GMP-047-010	2.07	Fail
06-PD1-GMP-047-011	2.14	Fail
06-PD1-GMP-047-012	2.95	Pass
06-PD1-GMP-047-013	2.61	Pass
06-PD1-GMP-047-014	3.00	Pass
06-PD1-GMP-047-015	2.99	Pass
06-PD1-GMP-047-016	2.99	Pass
06-PD1-GMP-047-017	2.85	Pass
06-PD1-GMP-047-018	2.31	Fail
06-PD1-GMP-047-019	2.46	Fail
06-PD1-GMP-047-020	3.81	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-047-001 of this SDG and F2A090477-001 of SDG F2A090477. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A100460

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-047-001	F2A100460-001	Lead-214	B6	J
06-PD1-GMP-047-003	F2A100460-003	Lead-214	B6	J
06-PD1-GMP-047-010	F2A100460-010	Lead-214	B6	J
06-PD1-GMP-047-011	F2A100460-011	Lead-214	B6	J
06-PD1-GMP-047-018	F2A100460-018	Lead-214	B6	J
06-PD1-GMP-047-019	F2A100460-019	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F2A100463
SAMPLING DATE(S): December 09, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-073-001	F2A100463-001	Soil	X
06-PD1-GMP-073-002	F2A100463-002	Soil	X
06-PD1-GMP-073-003	F2A100463-003	Soil	X
06-PD1-GMP-073-004	F2A100463-004	Soil	X
06-PD1-GMP-073-005	F2A100463-005	Soil	X
06-PD1-GMP-073-006	F2A100463-006	Soil	X
06-PD1-GMP-073-007	F2A100463-007	Soil	X
06-PD1-GMP-073-008	F2A100463-008	Soil	X
06-PD1-GMP-073-009	F2A100463-009	Soil	X
06-PD1-GMP-073-010	F2A100463-010	Soil	X
06-PD1-GMP-073-011	F2A100463-011	Soil	X
06-PD1-GMP-073-012	F2A100463-012	Soil	X
06-PD1-GMP-073-013	F2A100463-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-073-014	F2A100463-014	Soil	X
06-PD1-GMP-073-015	F2A100463-015	Soil	X
06-PD1-GMP-073-016	F2A100463-016	Soil	X
06-PD1-GMP-073-017	F2A100463-017	Soil	X
06-PD1-GMP-073-018	F2A100463-018	Soil	X
06-PD1-GMP-073-019	F2A100463-019	Soil	X
06-PD1-GMP-073-020	F2A100463-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A100463 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2A130000-098B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.150 pCi/g	0.0662 pCi/g	4.52

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-073-001	2.45	Fail
06-PD1-GMP-073-002	1.54	Fail
06-PD1-GMP-073-003	2.58	Pass

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-073-004	0.87	Fail
06-PD1-GMP-073-005	0.13	Fail
06-PD1-GMP-073-006	2.82	Pass
06-PD1-GMP-073-007	3.44	Pass
06-PD1-GMP-073-008	2.43	Fail
06-PD1-GMP-073-009	3.76	Pass
06-PD1-GMP-073-010	0.19	Fail
06-PD1-GMP-073-011	0.73	Fail
06-PD1-GMP-073-012	2.34	Fail
06-PD1-GMP-073-013	3.76	Pass
06-PD1-GMP-073-014	2.85	Pass
06-PD1-GMP-073-015	3.70	Pass
06-PD1-GMP-073-016	3.17	Pass
06-PD1-GMP-073-017	2.89	Pass
06-PD1-GMP-073-018	1.38	Fail
06-PD1-GMP-073-019	3.36	Pass
06-PD1-GMP-073-020	2.27	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-073-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A100463

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-073-001	F2A100463-001	Lead-214	B6	J
06-PD1-GMP-073-002	F2A100463-002	Lead-214	B6	J
06-PD1-GMP-073-004	F2A100463-004	Lead-214	B6	J
06-PD1-GMP-073-005	F2A100463-005	Lead-214	B6	J
06-PD1-GMP-073-008	F2A100463-008	Lead-214	B6	J
06-PD1-GMP-073-010	F2A100463-010	Lead-214	B6	J
06-PD1-GMP-073-011	F2A100463-011	Lead-214	B6	J
06-PD1-GMP-073-012	F2A100463-012	Lead-214	B6	J
06-PD1-GMP-073-018	F2A100463-018	Lead-214	B6	J
06-PD1-GMP-073-020	F2A100463-020	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F2A100464
SAMPLING DATE(S): December 02, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-014-003	F2A100464-006	Soil	X
06-PD1-SP-014-019	F2A100464-007	Soil	X
06-PD1-SP-014-021	F2A100464-008	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A100464 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-073-004 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A100464

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F2A100464
SAMPLING DATE(S): December 09, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-073-004	F2A100464-001	Soil	X
06-PD1-GMP-073-008	F2A100464-002	Soil	X
06-PD1-GMP-073-013	F2A100464-003	Soil	X
06-PD1-GMP-073-015	F2A100464-004	Soil	X
06-PD1-GMP-073-016	F2A100464-005	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A100464 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-073-004 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F2A100464

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F2A100466
SAMPLING DATE(S): October 12, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-047-003	F2A100466-001	Soil	X
06-PD1-GMP-047-012	F2A100466-002	Soil	X
06-PD1-GMP-047-013	F2A100466-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A100466 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2A110000-054B for the following analyte:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Total Strontium	0.237 pCi/g	0.151 pCi/g	3.14

The three associated sample results were non-detected; therefore, the samples did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-047-003	Non-detect	N/A
06-PD1-GMP-047-012	Non-detect	N/A
06-PD1-GMP-047-013	Non-detect	N/A

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F2A100472-021 of SDG F2A100472. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A100466

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F2A100468
SAMPLING DATE(S): December 02, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-014-001	F2A100468-001	Soil	X
06-PD1-SP-014-002	F2A100468-002	Soil	X
06-PD1-SP-014-003	F2A100468-003	Soil	X
06-PD1-SP-014-004	F2A100468-004	Soil	X
06-PD1-SP-014-005	F2A100468-005	Soil	X
06-PD1-SP-014-006	F2A100468-006	Soil	X
06-PD1-SP-014-007	F2A100468-007	Soil	X
06-PD1-SP-014-008	F2A100468-008	Soil	X
06-PD1-SP-014-009	F2A100468-009	Soil	X
06-PD1-SP-014-010	F2A100468-010	Soil	X
06-PD1-SP-014-011	F2A100468-011	Soil	X
06-PD1-SP-014-012	F2A100468-012	Soil	X
06-PD1-SP-014-013	F2A100468-013	Soil	X
06-PD1-SP-014-014	F2A100468-014	Soil	X
06-PD1-SP-014-015	F2A100468-015	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-014-016	F2A100468-016	Soil	X
06-PD1-SP-014-017	F2A100468-017	Soil	X
06-PD1-SP-014-018	F2A100468-018	Soil	X
06-PD1-SP-014-019	F2A100468-019	Soil	X
06-PD1-SP-014-020	F2A100468-020	Soil	X
06-PD1-SP-014-021	F2A100468-021	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A100468 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-014-001 of this SDG and sample 06-PD1T-271-001 of SDG F2A100465. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A100468

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F2A170456
SAMPLING DATE(S): December 12, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-074-001	F2A170456-001	Soil	X
06-PD1-GMP-074-002	F2A170456-002	Soil	X
06-PD1-GMP-074-003	F2A170456-003	Soil	X
06-PD1-GMP-074-004	F2A170456-004	Soil	X
06-PD1-GMP-074-005	F2A170456-005	Soil	X
06-PD1-GMP-074-006	F2A170456-006	Soil	X
06-PD1-GMP-074-007	F2A170456-007	Soil	X
06-PD1-GMP-074-008	F2A170456-008	Soil	X
06-PD1-GMP-074-009	F2A170456-009	Soil	X
06-PD1-GMP-074-010	F2A170456-010	Soil	X
06-PD1-GMP-074-011	F2A170456-011	Soil	X
06-PD1-GMP-074-012	F2A170456-012	Soil	X
06-PD1-GMP-074-013	F2A170456-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-074-014	F2A170456-014	Soil	X
06-PD1-GMP-074-015	F2A170456-015	Soil	X
06-PD1-GMP-074-016	F2A170456-016	Soil	X
06-PD1-GMP-074-017	F2A170456-017	Soil	X
06-PD1-GMP-074-018	F2A170456-018	Soil	X
06-PD1-GMP-074-019	F2A170456-019	Soil	X
06-PD1-GMP-074-020	F2A170456-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A170456 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-074-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A170456

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 14, 2012

SDG NUMBER: F2A170463
SAMPLING DATE(S): December 12, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-074-001	F2A170463-001	Soil	X
06-PD1-GMP-074-015	F2A170463-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A170463 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-074-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A170463

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F2A300440
SAMPLING DATE(S): April 21, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-051-002	F2A300440-001	Soil	X
06-PD1-GMP-051-003	F2A300440-002	Soil	X
06-PD1-GMP-051-005	F2A300440-003	Soil	X
06-PD1-GMP-051-006	F2A300440-004	Soil	X
06-PD1-GMP-051-008	F2A300440-005	Soil	X
06-PD1-GMP-051-009	F2A300440-006	Soil	X
06-PD1-GMP-051-012	F2A300440-007	Soil	X
06-PD1-GMP-051-015	F2A300440-008	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A300440 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for several samples exceeded the laboratory holding time criteria of 180 days by 107-115 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary. Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-051-002 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A300440

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F2A300441
SAMPLING DATE(S): October 11, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-051-028	F2A300441-001	Soil	X
06-PD1-GMP-051-029	F2A300441-002	Soil	X
06-PD1-GMP-051-030	F2A300441-003	Soil	X
06-PD1-GMP-051-031	F2A300441-004	Soil	X
06-PD1-GMP-051-032	F2A300441-005	Soil	X
06-PD1-GMP-051-033	F2A300441-006	Soil	X
06-PD1-GMP-051-034	F2A300441-007	Soil	X
06-PD1-GMP-051-035	F2A300441-008	Soil	X
06-PD1-GMP-051-036	F2A300441-009	Soil	X
06-PD1-GMP-051-037	F2A300441-010	Soil	X
06-PD1-GMP-051-038	F2A300441-011	Soil	X
06-PD1-GMP-051-039	F2A300441-012	Soil	X
06-PD1-GMP-051-040	F2A300441-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-051-041	F2A300441-014	Soil	X
06-PD1-GMP-051-042	F2A300441-015	Soil	X
06-PD1-GMP-051-043	F2A300441-016	Soil	X
06-PD1-GMP-051-044	F2A300441-017	Soil	X
06-PD1-GMP-051-045	F2A300441-018	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A300441 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2A310000-089B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.124 pCi/g	0.0488 pCi/g	5.09

Z_{DER} was calculated to determine the relative difference of sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample that was demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-051-028	3.73	Pass
06-PD1-GMP-051-029	2.71	Pass
06-PD1-GMP-051-030	3.22	Pass

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-051-031	3.21	Pass
06-PD1-GMP-051-032	3.41	Pass
06-PD1-GMP-051-033	3.60	Pass
06-PD1-GMP-051-034	4.73	Pass
06-PD1-GMP-051-035	2.38	Fail
06-PD1-GMP-051-036	3.78	Pass
06-PD1-GMP-051-037	2.90	Pass
06-PD1-GMP-051-038	3.10	Pass
06-PD1-GMP-051-039	2.88	Pass
06-PD1-GMP-051-040	3.64	Pass
06-PD1-GMP-051-041	3.18	Pass
06-PD1-GMP-051-042	3.03	Pass
06-PD1-GMP-051-043	2.41	Fail
06-PD1-GMP-051-044	3.33	Pass
06-PD1-GMP-051-045	3.16	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-051-028 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A300441

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-051-035	F2A300441-008	Lead-214	B6	J
06-PD1-GMP-051-043	F2A300441-016	Lead-214	B6	J

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4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F2A300447
SAMPLING DATE(S): April 21, 2011 – October 11, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-051-002	F2A300447-001	Soil	X
06-PD1-GMP-051-015	F2A300447-002	Soil	X
06-PD1-GMP-051-032	F2A300447-003	Soil	X
06-PD1-GMP-051-035	F2A300447-004	Soil	X
06-PD1-GMP-051-042	F2A300447-005	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2A300447 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates (2 samples) exceeded the laboratory holding time criteria of 180 days by 117days. Due to the relatively long half-lives of the analytes of concern, this exceedance should not adversely affect sample result. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F2A300417-001 of SDG F2A300417. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2A300447

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F2B010455
SAMPLING DATE(S): January 16, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-011-201	F2B010455-001	Soil	X
06-PD1-GMP-011-202	F2B010455-002	Soil	X
06-PD1-GMP-011-203	F2B010455-003	Soil	X
06-PD1-GMP-011-204	F2B010455-004	Soil	X
06-PD1-GMP-011-205	F2B010455-005	Soil	X
06-PD1-GMP-011-206	F2B010455-006	Soil	X
06-PD1-GMP-011-207	F2B010455-007	Soil	X
06-PD1-GMP-011-208	F2B010455-008	Soil	X
06-PD1-GMP-011-209	F2B010455-009	Soil	X
06-PD1-GMP-011-210	F2B010455-010	Soil	X
06-PD1-GMP-011-211	F2B010455-011	Soil	X
06-PD1-GMP-011-212	F2B010455-012	Soil	X
06-PD1-GMP-011-213	F2B010455-013	Soil	X
06-PD1-GMP-011-214	F2B010455-014	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-GMP-011-215	F2B010455-015	Soil	X
06-PD1-GMP-011-216	F2B010455-016	Soil	X
06-PD1-GMP-011-217	F2B010455-017	Soil	X
06-PD1-GMP-011-218	F2B010455-018	Soil	X
06-PD1-GMP-011-219	F2B010455-019	Soil	X
06-PD1-GMP-011-220	F2B010455-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B010455 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-011-208 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B010455

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F2B010458
SAMPLING DATE(S): December 23, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-060-101	F2B010458-001	Soil	X
06-PD1-GMP-060-102	F2B010458-002	Soil	X
06-PD1-GMP-060-103	F2B010458-003	Soil	X
06-PD1-GMP-060-104	F2B010458-004	Soil	X
06-PD1-GMP-060-105	F2B010458-005	Soil	X
06-PD1-GMP-060-106	F2B010458-006	Soil	X
06-PD1-GMP-060-107	F2B010458-007	Soil	X
06-PD1-GMP-060-108	F2B010458-008	Soil	X
06-PD1-GMP-060-109	F2B010458-009	Soil	X
06-PD1-GMP-060-110	F2B010458-010	Soil	X
06-PD1-GMP-060-111	F2B010458-011	Soil	X
06-PD1-GMP-060-112	F2B010458-012	Soil	X
06-PD1-GMP-060-113	F2B010458-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-060-114	F2B010458-014	Soil	X
06-PD1-GMP-060-115	F2B010458-015	Soil	X
06-PD1-GMP-060-116	F2B010458-016	Soil	X
06-PD1-GMP-060-117	F2B010458-017	Soil	X
06-PD1-GMP-060-118	F2B010458-018	Soil	X
06-PD1-GMP-060-119	F2B010458-019	Soil	X
06-PD1-GMP-060-120	F2B010458-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B010458 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2B030000-101B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.102 pCi/g	0.0499 pCi/g	4.08

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-060-101	2.82	Pass
06-PD1-GMP-060-102	4.01	Pass
06-PD1-GMP-060-103	2.37	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-060-104	2.24	Fail
06-PD1-GMP-060-105	3.03	Pass
06-PD1-GMP-060-106	3.17	Pass
06-PD1-GMP-060-107	1.40	Fail
06-PD1-GMP-060-108	2.93	Pass
06-PD1-GMP-060-109	4.05	Pass
06-PD1-GMP-060-110	4.23	Pass
06-PD1-GMP-060-111	3.26	Pass
06-PD1-GMP-060-112	3.53	Pass
06-PD1-GMP-060-113	3.31	Pass
06-PD1-GMP-060-114	3.51	Pass
06-PD1-GMP-060-115	2.71	Pass
06-PD1-GMP-060-116	2.92	Pass
06-PD1-GMP-060-117	3.16	Pass
06-PD1-GMP-060-118	3.31	Pass
06-PD1-GMP-060-119	3.40	Pass
06-PD1-GMP-060-120	3.47	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-060-111 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B010458

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-060-103	F2B010458-003	Lead-214	B6	J
06-PD1-GMP-060-104	F2B010458-004	Lead-214	B6	J
06-PD1-GMP-060-107	F2B010458-007	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F2B020423
SAMPLING DATE(S): December 23, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-060-109	F2B020423-003	Soil	X
06-PD1-GMP-060-111	F2B020423-004	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B020423 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2B020000-121B for the following analyte:

<u>Analyte</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Total Strontium	0.145 pCi/g	0.103 pCi/g	2.82

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated detected samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J). Non-detected results did not require data qualification.

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-060-109	Non-detect	N/A
06-PD1-GMP-060-111	0.21	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-011-214 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B020423

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
06-PD1-GMP-060-111	F2B020423-004	Total Strontium	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F2B060422
SAMPLING DATE(S): November 18, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-002-121	F2B060422-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B060422 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-002-12 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B060422

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F2B060429
SAMPLING DATE(S): November 07, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-SP-002-101	F2B060429-001	Soil	X
06-PD1-SP-002-102	F2B060429-002	Soil	X
06-PD1-SP-002-103	F2B060429-003	Soil	X
06-PD1-SP-002-104	F2B060429-004	Soil	X
06-PD1-SP-002-105	F2B060429-005	Soil	X
06-PD1-SP-002-107	F2B060429-006	Soil	X
06-PD1-SP-002-108	F2B060429-007	Soil	X
06-PD1-SP-002-109	F2B060429-008	Soil	X
06-PD1-SP-002-110	F2B060429-009	Soil	X
06-PD1-SP-002-111	F2B060429-010	Soil	X
06-PD1-SP-002-112	F2B060429-011	Soil	X
06-PD1-SP-002-113	F2B060429-012	Soil	X
06-PD1-SP-002-114	F2B060429-013	Soil	X
06-PD1-SP-002-115	F2B060429-014	Soil	X
06-PD1-SP-002-116	F2B060429-015	Soil	X

Client <u>Sample #</u>	Lab <u>Sample #</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-SP-002-117	F2B060429-016	Soil	X
06-PD1-SP-002-118	F2B060429-017	Soil	X
06-PD1-SP-002-119	F2B060429-018	Soil	X
06-PD1-SP-002-120	F2B060429-019	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B060429 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-002-101 of this SDG and sample 06-PD1T-271-001 of SDG F2A100465. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F2B060429

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F2B060439
SAMPLING DATE(S): November 07, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-002-105	F2B060439-004	Soil	X
06-PD1-SP-002-115	F2B060439-005	Soil	X
06-PD1-SP-002-116	F2B060439-006	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B060439 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-SP-002-105 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B060439

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F2B130446
SAMPLING DATE(S): January 21, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-056-101	F2B130446-001	Soil	X
06-PD1-GMP-056-102	F2B130446-002	Soil	X
06-PD1-GMP-056-103	F2B130446-003	Soil	X
06-PD1-GMP-056-104	F2B130446-004	Soil	X
06-PD1-GMP-056-105	F2B130446-005	Soil	X
06-PD1-GMP-056-106	F2B130446-006	Soil	X
06-PD1-GMP-056-107	F2B130446-007	Soil	X
06-PD1-GMP-056-108	F2B130446-008	Soil	X
06-PD1-GMP-056-109	F2B130446-009	Soil	X
06-PD1-GMP-056-110	F2B130446-010	Soil	X
06-PD1-GMP-056-111	F2B130446-011	Soil	X
06-PD1-GMP-056-112	F2B130446-012	Soil	X
06-PD1-GMP-056-113	F2B130446-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-056-114	F2B130446-014	Soil	X
06-PD1-GMP-056-115	F2B130446-015	Soil	X
06-PD1-GMP-056-116	F2B130446-016	Soil	X
06-PD1-GMP-056-117	F2B130446-017	Soil	X
06-PD1-GMP-056-118	F2B130446-018	Soil	X
06-PD1-GMP-056-119	F2B130446-019	Soil	X
06-PD1-GMP-056-120	F2B130446-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B130446 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2B140000-025B for the following isotopes:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Bismuth-214	0.108 pCi/g	0.0828 pCi/g	2.61
Radium-226	0.108 pCi/g	0.0828 pCi/g	2.61

Z_{DER} was calculated to determine the relative difference of sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample that was demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J). Non-detected results did not require data qualification.

<u>Client Sample ID</u>	<u>Bi-214</u>		<u>Ra-226</u>	
	<u>Z-DER</u>	<u>Pass/Fail</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-056-101	1.90	Fail	1.90	Fail
06-PD1-GMP-056-102	1.51	Fail	1.51	Fail
06-PD1-GMP-056-103	2.74	Pass	2.74	Pass
06-PD1-GMP-056-104	2.21	Fail	2.21	Fail
06-PD1-GMP-056-105	3.32	Pass	3.32	Pass
06-PD1-GMP-056-106	4.07	Pass	4.07	Pass
06-PD1-GMP-056-107	2.95	Pass	2.95	Pass
06-PD1-GMP-056-108	3.05	Pass	3.05	Pass
06-PD1-GMP-056-109	2.52	Fail	2.52	Fail
06-PD1-GMP-056-110	2.60	Pass	2.60	Pass
06-PD1-GMP-056-111	0.78	Fail	0.78	Fail
06-PD1-GMP-056-112	2.69	Pass	2.69	Pass
06-PD1-GMP-056-113	2.47	Fail	2.47	Fail
06-PD1-GMP-056-114	0.36	Fail	0.36	Fail
06-PD1-GMP-056-115	2.00	Fail	2.00	Fail
06-PD1-GMP-056-116	2.46	Fail	2.46	Fail
06-PD1-GMP-056-117	Non-detect	N/A	Non-detect	N/A
06-PD1-GMP-056-118	0.66	Fail	0.66	Fail
06-PD1-GMP-056-119	0.40	Fail	0.40	Fail
06-PD1-GMP-056-120	2.48	Fail	2.48	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-056-101 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B130446

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-056-101	F2B130446-001	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-102	F2B130446-002	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-104	F2B130446-004	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-109	F2B130446-009	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-111	F2B130446-011	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-113	F2B130446-013	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-114	F2B130446-014	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-115	F2B130446-015	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-116	F2B130446-016	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-118	F2B130446-018	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-119	F2B130446-019	Bismuth-214, Radium-226	B6	J
06-PD1-GMP-056-120	F2B130446-020	Bismuth-214, Radium-226	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 06, 2012
SDG NUMBER: F2B130449
SAMPLING DATE(S): March 05, 2011 - March 07, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-028-001	F2B130449-001	Soil	X
06-PD1-GMP-028-002	F2B130449-002	Soil	X
06-PD1-GMP-028-003	F2B130449-003	Soil	X
06-PD1-GMP-028-004	F2B130449-004	Soil	X
06-PD1-GMP-028-005	F2B130449-005	Soil	X
06-PD1-GMP-028-006	F2B130449-006	Soil	X
06-PD1-GMP-028-007	F2B130449-007	Soil	X
06-PD1-GMP-028-008	F2B130449-008	Soil	X
06-PD1-GMP-028-009	F2B130449-009	Soil	X
06-PD1-GMP-028-010	F2B130449-010	Soil	X
06-PD1-GMP-028-011	F2B130449-011	Soil	X
06-PD1-GMP-028-012	F2B130449-012	Soil	X
06-PD1-GMP-028-013	F2B130449-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-028-014	F2B130449-014	Soil	X
06-PD1-GMP-028-015	F2B130449-015	Soil	X
06-PD1-GMP-028-016	F2B130449-016	Soil	X
06-PD1-GMP-028-017	F2B130449-017	Soil	X
06-PD1-GMP-028-018	F2B130449-018	Soil	X
06-PD1-GMP-028-019	F2B130449-019	Soil	X
06-PD1-GMP-028-020	F2B130449-020	Soil	X
06-PD1-GMP-028-021	F2B130449-021	Soil	X
06-PD1-GMP-028-022	F2B130449-022	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B130449 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 167 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2B140000-031B (batch 2045031) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.165 pCi/g	0.0707 pCi/g	4.67

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-028-013	2.37	Fail
06-PD1-GMP-028-014	1.04	Fail
06-PD1-GMP-028-015	1.12	Fail
06-PD1-GMP-028-016	2.16	Fail
06-PD1-GMP-028-017	2.18	Fail
06-PD1-GMP-028-018	1.45	Fail
06-PD1-GMP-028-019	2.21	Fail
06-PD1-GMP-028-020	1.08	Fail
06-PD1-GMP-028-021	2.11	Fail
06-PD1-GMP-028-022	1.87	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-028-001 and 06-PD1-GMP-028-013 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B130449

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-028-013	F2B130449-013	Lead-214	B6	J
06-PD1-GMP-028-014	F2B130449-014	Lead-214	B6	J
06-PD1-GMP-028-015	F2B130449-015	Lead-214	B6	J
06-PD1-GMP-028-016	F2B130449-016	Lead-214	B6	J
06-PD1-GMP-028-017	F2B130449-017	Lead-214	B6	J
06-PD1-GMP-028-018	F2B130449-018	Lead-214	B6	J
06-PD1-GMP-028-019	F2B130449-019	Lead-214	B6	J
06-PD1-GMP-028-020	F2B130449-020	Lead-214	B6	J
06-PD1-GMP-028-021	F2B130449-021	Lead-214	B6	J
06-PD1-GMP-028-022	F2B130449-022	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 14, 2012
SDG NUMBER: F2B130453
SAMPLING DATE(S): October 13, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-071-007	F2B130453-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B130453 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-071-007 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B130453

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: November 01, 2012
SDG NUMBER: F2B200417
SAMPLING DATE(S): January 29, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-SP-006-003	F2B200417-007	Soil	X
06-PD1-SP-006-006	F2B200417-008	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B200417 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

The LCS recovery was below the laboratory QC limits in LCS F2B210000-168C, indicating a potential negative bias for the analyte.

<u>Analyte</u>	<u>LCS Recovery</u>	<u>QC Limits</u>
Total Strontium	68%	85-118%

The two associated sample results for Total Strontium were non-detected and were assigned the validation qualifier of estimated (UJ).

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-028-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B200417

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
06-PD1-SP-006-003	F2B200417-007	Total Strontium	L	UJ
06-PD1-SP-006-006	F2B200417-008	Total Strontium	L	UJ

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2B200424
SAMPLING DATE(S): April 20, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-042-001	F2B200424-001	Soil	X
06-PD1-GMP-042-002	F2B200424-002	Soil	X
06-PD1-GMP-042-003	F2B200424-003	Soil	X
06-PD1-GMP-042-004	F2B200424-004	Soil	X
06-PD1-GMP-042-005	F2B200424-005	Soil	X
06-PD1-GMP-042-006	F2B200424-006	Soil	X
06-PD1-GMP-042-007	F2B200424-007	Soil	X
06-PD1-GMP-042-008	F2B200424-008	Soil	X
06-PD1-GMP-042-009	F2B200424-009	Soil	X
06-PD1-GMP-042-010	F2B200424-010	Soil	X
06-PD1-GMP-042-011	F2B200424-011	Soil	X
06-PD1-GMP-042-012	F2B200424-012	Soil	X
06-PD1-GMP-042-013	F2B200424-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-042-014	F2B200424-014	Soil	X
06-PD1-GMP-042-015	F2B200424-015	Soil	X
06-PD1-GMP-042-016	F2B200424-016	Soil	X
06-PD1-GMP-042-017	F2B200424-017	Soil	X
06-PD1-GMP-042-018	F2B200424-018	Soil	X
06-PD1-GMP-042-019	F2B200424-019	Soil	X
06-PD1-GMP-042-020	F2B200424-020	Soil	X
06-PD1-GMP-042-021	F2B200424-021	Soil	X
06-PD1-GMP-042-022	F2B200424-022	Soil	X
06-PD1-GMP-042-023	F2B200424-023	Soil	X
06-PD1-GMP-042-024	F2B200424-024	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B200424 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 135 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2B210000-139B (batch 2052139) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.183 pCi/g	0.0762 pCi/g	4.81

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-042-001	0.17	Fail
06-PD1-GMP-042-002	3.34	Pass
06-PD1-GMP-042-003	1.92	Fail
06-PD1-GMP-042-004	2.69	Pass
06-PD1-GMP-042-005	1.64	Fail
06-PD1-GMP-042-006	2.45	Fail
06-PD1-GMP-042-007	2.61	Pass
06-PD1-GMP-042-008	2.46	Fail
06-PD1-GMP-042-009	2.20	Fail
06-PD1-GMP-042-010	1.47	Fail
06-PD1-GMP-042-011	2.17	Fail
06-PD1-GMP-042-012	1.96	Fail
06-PD1-GMP-042-013	1.98	Fail
06-PD1-GMP-042-014	3.28	Pass
06-PD1-GMP-042-015	1.15	Fail
06-PD1-GMP-042-016	3.43	Pass
06-PD1-GMP-042-017	2.77	Pass
06-PD1-GMP-042-018	3.44	Pass
06-PD1-GMP-042-019	3.19	Pass

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2B210000-141B (batch 2052141) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.114 pCi/g	0.0662 pCi/g	3.43

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-042-021	2.48	Fail
06-PD1-GMP-042-022	4.03	Pass
06-PD1-GMP-042-023	3.28	Pass
06-PD1-GMP-042-024	2.28	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-042-001 and 06-PD1-GMP-042-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F2B200424

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-042-001	F2B200424-001	Lead-214	B6	J
06-PD1-GMP-042-003	F2B200424-003	Lead-214	B6	J
06-PD1-GMP-042-005	F2B200424-005	Lead-214	B6	J
06-PD1-GMP-042-006	F2B200424-006	Lead-214	B6	J
06-PD1-GMP-042-008	F2B200424-008	Lead-214	B6	J
06-PD1-GMP-042-009	F2B200424-009	Lead-214	B6	J
06-PD1-GMP-042-010	F2B200424-010	Lead-214	B6	J
06-PD1-GMP-042-011	F2B200424-011	Lead-214	B6	J
06-PD1-GMP-042-012	F2B200424-012	Lead-214	B6	J
06-PD1-GMP-042-013	F2B200424-013	Lead-214	B6	J
06-PD1-GMP-042-015	F2B200424-015	Lead-214	B6	J
06-PD1-GMP-042-020	F2B200424-020	Lead-214	B6	J
06-PD1-GMP-042-021	F2B200424-021	Lead-214	B6	J
06-PD1-GMP-042-024	F2B200424-024	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012

SDG NUMBER: F2B210449
SAMPLING DATE(S): January 26, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-034-101	F2B210449-001	Soil	X
06-PD1-GMP-034-102	F2B210449-002	Soil	X
06-PD1-GMP-034-103	F2B210449-003	Soil	X
06-PD1-GMP-034-104	F2B210449-004	Soil	X
06-PD1-GMP-034-105	F2B210449-005	Soil	X
06-PD1-GMP-034-106	F2B210449-006	Soil	X
06-PD1-GMP-034-107	F2B210449-007	Soil	X
06-PD1-GMP-034-108	F2B210449-008	Soil	X
06-PD1-GMP-034-109	F2B210449-009	Soil	X
06-PD1-GMP-034-110	F2B210449-010	Soil	X
06-PD1-GMP-034-111	F2B210449-011	Soil	X
06-PD1-GMP-034-112	F2B210449-012	Soil	X
06-PD1-GMP-034-113	F2B210449-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-034-114	F2B210449-014	Soil	X
06-PD1-GMP-034-115	F2B210449-015	Soil	X
06-PD1-GMP-034-116	F2B210449-016	Soil	X
06-PD1-GMP-034-117	F2B210449-017	Soil	X
06-PD1-GMP-034-118	F2B210449-018	Soil	X
06-PD1-GMP-034-119	F2B210449-019	Soil	X
06-PD1-GMP-034-120	F2B210449-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B210449- Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-034-101 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B210449

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F2B210452
SAMPLING DATE(S): January 26, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-034-111	F2B210452-003	Soil	X
06-PD1-GMP-034-120	F2B210452-004	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B210452 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F2B200416-002 of SDG F2B200416. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B210452

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2B290427
SAMPLING DATE(S): February 10, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-040-101	F2B290427-001	Soil	X
06-PD1-GMP-040-102	F2B290427-002	Soil	X
06-PD1-GMP-040-103	F2B290427-003	Soil	X
06-PD1-GMP-040-104	F2B290427-004	Soil	X
06-PD1-GMP-040-105	F2B290427-005	Soil	X
06-PD1-GMP-040-106	F2B290427-006	Soil	X
06-PD1-GMP-040-107	F2B290427-007	Soil	X
06-PD1-GMP-040-108	F2B290427-008	Soil	X
06-PD1-GMP-040-109	F2B290427-009	Soil	X
06-PD1-GMP-040-110	F2B290427-010	Soil	X
06-PD1-GMP-040-111	F2B290427-011	Soil	X
06-PD1-GMP-040-112	F2B290427-012	Soil	X
06-PD1-GMP-040-113	F2B290427-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-040-114	F2B290427-014	Soil	X
06-PD1-GMP-040-115	F2B290427-015	Soil	X
06-PD1-GMP-040-116	F2B290427-016	Soil	X
06-PD1-GMP-040-117	F2B290427-017	Soil	X
06-PD1-GMP-040-118	F2B290427-018	Soil	X
06-PD1-GMP-040-119	F2B290427-019	Soil	X
06-PD1-GMP-040-120	F2B290427-020	Soil	X
06-PD1-GMP-040-121	F2B290427-021	Soil	X
06-PD1-GMP-040-122	F2B290427-022	Soil	X
06-PD1-GMP-040-123	F2B290427-023	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B290427 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2C020000-022B (batch 2062022) for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.201 pCi/g	0.0872 pCi/g	4.61

Z_{DER} was calculated to determine the relative difference of sample analyte result with the failed blank analyte result. The affected detected analyte in the associated sample that was demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-040-101	2.26	Fail
06-PD1-GMP-040-102	2.78	Pass
06-PD1-GMP-040-103	1.90	Fail

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-040-104	2.56	Fail
06-PD1-GMP-040-105	2.06	Fail
06-PD1-GMP-040-106	2.33	Fail
06-PD1-GMP-040-107	2.34	Fail
06-PD1-GMP-040-108	2.46	Fail
06-PD1-GMP-040-109	2.58	Fail
06-PD1-GMP-040-110	1.40	Fail
06-PD1-GMP-040-111	3.11	Pass
06-PD1-GMP-040-112	1.93	Fail
06-PD1-GMP-040-113	2.91	Pass
06-PD1-GMP-040-114	2.16	Fail
06-PD1-GMP-040-115	1.16	Fail
06-PD1-GMP-040-116	2.65	Pass
06-PD1-GMP-040-117	0.97	Fail
06-PD1-GMP-040-118	2.28	Fail
06-PD1-GMP-040-119	2.71	Pass
06-PD1-GMP-040-120	2.96	Pass

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-040-101 and 06-PD1-GMP-040-121 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B290427

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-040-101	F2B290427-001	Lead-214	B6	J
06-PD1-GMP-040-103	F2B290427-003	Lead-214	B6	J
06-PD1-GMP-040-104	F2B290427-004	Lead-214	B6	J
06-PD1-GMP-040-105	F2B290427-005	Lead-214	B6	J
06-PD1-GMP-040-106	F2B290427-006	Lead-214	B6	J
06-PD1-GMP-040-107	F2B290427-007	Lead-214	B6	J
06-PD1-GMP-040-108	F2B290427-008	Lead-214	B6	J
06-PD1-GMP-040-109	F2B290427-009	Lead-214	B6	J
06-PD1-GMP-040-110	F2B290427-010	Lead-214	B6	J
06-PD1-GMP-040-112	F2B290427-012	Lead-214	B6	J
06-PD1-GMP-040-114	F2B290427-014	Lead-214	B6	J
06-PD1-GMP-040-115	F2B290427-015	Lead-214	B6	J
06-PD1-GMP-040-117	F2B290427-017	Lead-214	B6	J
06-PD1-GMP-040-118	F2B290427-018	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F2B290443
SAMPLING DATE(S): March 04, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-017-001	F2B290443-001	Soil	X
06-PD1-GMP-017-002	F2B290443-002	Soil	X
06-PD1-GMP-017-003	F2B290443-003	Soil	X
06-PD1-GMP-017-004	F2B290443-004	Soil	X
06-PD1-GMP-017-005	F2B290443-005	Soil	X
06-PD1-GMP-017-006	F2B290443-006	Soil	X
06-PD1-GMP-017-007	F2B290443-007	Soil	X
06-PD1-GMP-017-008	F2B290443-008	Soil	X
06-PD1-GMP-017-009	F2B290443-009	Soil	X
06-PD1-GMP-017-010	F2B290443-010	Soil	X
06-PD1-GMP-017-011	F2B290443-011	Soil	X
06-PD1-GMP-017-012	F2B290443-012	Soil	X
06-PD1-GMP-017-013	F2B290443-013	Soil	X
06-PD1-GMP-017-014	F2B290443-014	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-017-015	F2B290443-015	Soil	X
06-PD1-GMP-017-016	F2B290443-016	Soil	X
06-PD1-GMP-017-017	F2B290443-017	Soil	X
06-PD1-GMP-017-018	F2B290443-018	Soil	X
06-PD1-GMP-017-019	F2B290443-019	Soil	X
06-PD1-GMP-017-020	F2B290443-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B290443 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 181-192 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2C020000-024B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.183 pCi/g	0.0727 pCi/g	5.04

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-017-001	2.13	Fail
06-PD1-GMP-017-002	-0.23	Fail
06-PD1-GMP-017-003	1.54	Fail
06-PD1-GMP-017-004	1.56	Fail
06-PD1-GMP-017-005	1.64	Fail
06-PD1-GMP-017-006	0.87	Fail
06-PD1-GMP-017-007	1.30	Fail
06-PD1-GMP-017-008	1.89	Fail
06-PD1-GMP-017-009	0.75	Fail
06-PD1-GMP-017-010	1.31	Fail
06-PD1-GMP-017-011	1.38	Fail
06-PD1-GMP-017-012	2.00	Fail
06-PD1-GMP-017-013	1.48	Fail
06-PD1-GMP-017-014	1.14	Fail
06-PD1-GMP-017-015	2.37	Fail
06-PD1-GMP-017-016	2.84	Pass
06-PD1-GMP-017-017	1.28	Fail
06-PD1-GMP-017-018	2.46	Fail
06-PD1-GMP-017-019	2.88	Pass
06-PD1-GMP-017-020	0.11	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-017-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B290443

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-017-001	F2B290443-001	Lead-214	B6	J
06-PD1-GMP-017-002	F2B290443-002	Lead-214	B6	J
06-PD1-GMP-017-003	F2B290443-003	Lead-214	B6	J
06-PD1-GMP-017-004	F2B290443-004	Lead-214	B6	J
06-PD1-GMP-017-005	F2B290443-005	Lead-214	B6	J
06-PD1-GMP-017-006	F2B290443-006	Lead-214	B6	J
06-PD1-GMP-017-007	F2B290443-007	Lead-214	B6	J
06-PD1-GMP-017-008	F2B290443-008	Lead-214	B6	J
06-PD1-GMP-017-009	F2B290443-009	Lead-214	B6	J
06-PD1-GMP-017-010	F2B290443-010	Lead-214	B6	J
06-PD1-GMP-017-011	F2B290443-011	Lead-214	B6	J
06-PD1-GMP-017-012	F2B290443-012	Lead-214	B6	J
06-PD1-GMP-017-013	F2B290443-013	Lead-214	B6	J
06-PD1-GMP-017-014	F2B290443-014	Lead-214	B6	J
06-PD1-GMP-017-015	F2B290443-015	Lead-214	B6	J
06-PD1-GMP-017-017	F2B290443-017	Lead-214	B6	J
06-PD1-GMP-017-018	F2B290443-018	Lead-214	B6	J
06-PD1-GMP-017-020	F2B290443-020	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: October 24, 2012

SDG NUMBER: F2B290448
SAMPLING DATE(S): March 04, 2011

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-017-001	F2B290448-001	Soil	X
06-PD1-GMP-017-005	F2B290448-002	Soil	X
06-PD1-GMP-017-017	F2B290448-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B290448 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 192 days. Due to the relatively long half-life of the analyte of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2C010000-060B for the following analyte:

<u>Analyte</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Total Strontium	0.126 pCi/g	0.090 pCi/g	2.80

Samples 06-PD1-GMP-017-001 and 06-PD1-GMP-017-005 Total Strontium results were both detected but below the reporting limit; therefore, no data qualification was necessary. Non-detected sample results did not require data qualification.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-017-001 of this SDG. All MD criteria met laboratory requirements. No data qualification was necessary.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B290448

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F2B290450
SAMPLING DATE(S): February 10, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-040-107	F2B290450-007	Soil	X
06-PD1-GMP-040-120	F2B290450-008	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B290450 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-026-198 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B290450

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 23, 2012
SDG NUMBER: F2B290451
SAMPLING DATE(S): February 02, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-017-021	F2B290451-001	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2B290451 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-017-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2B290451

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EML SR-03-RC Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Strontium-90)
DATA VALIDATION DATE: December 07, 2012

SDG NUMBER: F2C220461
SAMPLING DATE(S): February 10, 2012

SAMPLE(S):

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Sr-90</u>
06-PD1-GMP-040-123	F2C220461-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2C220461 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

STRONTIUM-90

SUMMARY

I.) General:

The laboratory has cited analytical method EML SR-03-RC Modified for the Strontium-90 analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F2C220460-001 of SDG F2C220460. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Strontium-90 included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Strontium-90 on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

The following sample result was assigned a validation qualifier of non-detected and estimated (UJ) for critical value / method detection limit exceeding the stated reporting limit.

<u>Client Sample ID</u>	<u>Analyte</u>	<u>Detection Limit</u>	<u>Reporting Limit</u>
06-PD1-GMP-040-123	Strontium-90	0.327 pCi/g	0.320 pCi/g

All other Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2C220461

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-040-123	F2C220461-002	Strontium-90	P	UJ

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F2C300426
SAMPLING DATE(S): January 21, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-056-103	F2C300426-001	Soil	X
06-PD1-GMP-056-113	F2C300426-002	Soil	X
06-PD1-GMP-056-117	F2C300426-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2C300426 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-056-103 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2C300426

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F2H280423
SAMPLING DATE(S): August 01, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-001-321	F2H280423-001	Soil	X
06-PD1-GMP-001-322	F2H280423-002	Soil	X
06-PD1-GMP-001-323	F2H280423-003	Soil	X
06-PD1-GMP-001-324	F2H280423-004	Soil	X
06-PD1-GMP-001-325	F2H280423-005	Soil	X
06-PD1-GMP-001-326	F2H280423-006	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2H280423 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-001-321 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2H280423

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F2H280428
SAMPLING DATE(S): August 01, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-001-301	F2H280428-001	Soil	X
06-PD1-GMP-001-302	F2H280428-002	Soil	X
06-PD1-GMP-001-303	F2H280428-003	Soil	X
06-PD1-GMP-001-304	F2H280428-004	Soil	X
06-PD1-GMP-001-305	F2H280428-005	Soil	X
06-PD1-GMP-001-306	F2H280428-006	Soil	X
06-PD1-GMP-001-307	F2H280428-007	Soil	X
06-PD1-GMP-001-308	F2H280428-008	Soil	X
06-PD1-GMP-001-309	F2H280428-009	Soil	X
06-PD1-GMP-001-310	F2H280428-010	Soil	X
06-PD1-GMP-001-311	F2H280428-011	Soil	X
06-PD1-GMP-001-312	F2H280428-012	Soil	X
06-PD1-GMP-001-313	F2H280428-013	Soil	X
06-PD1-GMP-001-314	F2H280428-014	Soil	X
06-PD1-GMP-001-315	F2H280428-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-001-316	F2H280428-016	Soil	X
06-PD1-GMP-001-317	F2H280428-017	Soil	X
06-PD1-GMP-001-318	F2H280428-018	Soil	X
06-PD1-GMP-001-319	F2H280428-019	Soil	X
06-PD1-GMP-001-320	F2H280428-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2H280428 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-001-301 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2H280428

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: October 12, 2012
SDG NUMBER: F2H280432
SAMPLING DATE(S): August 01, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-001-311	F2H280432-001	Soil	X
06-PD1-GMP-001-317	F2H280432-002	Soil	X
06-PD1-GMP-001-321	F2H280432-003	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2H280432 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample F2H280431-001 of SDG F2H280431. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2H280432

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F2J250452
SAMPLING DATE(S): January 21, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-024-221	F2J250452-007	Soil	X
06-PD1-GMP-024-222	F2J250452-008	Soil	X
06-PD1-GMP-024-225	F2J250452-011	Soil	X
06-PD1-GMP-025-305	F2J250452-014	Soil	X
06-PD1-GMP-025-314	F2J250452-016	Soil	X
06-PD1-GMP-025-317	F2J250452-017	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250452 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-024-221 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250452

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250453
SAMPLING DATE(S): August 21, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-075-106	F2J250453-014	Soil	X
06-PD1-GMP-075-114	F2J250453-015	Soil	X
06-PD1-GMP-075-115	F2J250453-016	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250453 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-030-217 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250453

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: December 08, 2012
SDG NUMBER: F2J250453
SAMPLING DATE(S): August 02, 2012 - August 04, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-030-303	F2J250453-004	Soil	X
06-PD1-GMP-030-315	F2J250453-005	Soil	X
06-PD1-GMP-035-205	F2J250453-006	Soil	X
06-PD1-GMP-035-209	F2J250453-007	Soil	X
06-PD1-GMP-059-301	F2J250453-008	Soil	X
06-PD1-GMP-059-308	F2J250453-010	Soil	X
06-PD1-GMP-059-320	F2J250453-011	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250453 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on samples 06-PD1-GMP-030-217 and 06-PD1-GMP-059-320 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F2J250453

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250456
SAMPLING DATE(S): August 21, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-076-103	F2J250456-004	Soil	X
06-PD1-GMP-076-110	F2J250456-006	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250456 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-076-065 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250456

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250457
SAMPLING DATE(S): September 14, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-077-021	F2J250457-001	Soil	X
06-PD1-GMP-077-022	F2J250457-002	Soil	X
06-PD1-GMP-077-023	F2J250457-003	Soil	X
06-PD1-GMP-077-024	F2J250457-004	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250457 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation, and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-077-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250457

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 905.0 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gas Flow Proportional Counting (Total Strontium)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250458
SAMPLING DATE(S): August 04, 2012 – September 12, 2012

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Total Sr</u>
06-PD1-GMP-076-124	F2J250458-001	Soil	X
06-PD1-GMP-077-005	F2J250458-003	Soil	X
06-PD1-GMP-077-019	F2J250458-007	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250458 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

TOTAL STRONTIUM

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 905.0 Modified for the Total Strontium analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-076-065 of SDG F2J250456. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Total Strontium included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis was not performed for Total Strontium on this project. No data qualification was required.

X.) Chemical Yield:

All Chemical Yield criteria met laboratory requirements. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250458

Field Sample ID	Laboratory Sample ID	Analyte	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2J250462
SAMPLING DATE(S): August 02, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-035-207	F2J250462-001	Soil	X
06-PD1-GMP-035-208	F2J250462-002	Soil	X
06-PD1-GMP-035-209	F2J250462-003	Soil	X
06-PD1-GMP-035-210	F2J250462-004	Soil	X
06-PD1-GMP-035-211	F2J250462-005	Soil	X
06-PD1-GMP-035-212	F2J250462-006	Soil	X
06-PD1-GMP-035-213	F2J250462-007	Soil	X
06-PD1-GMP-035-214	F2J250462-008	Soil	X
06-PD1-GMP-035-215	F2J250462-009	Soil	X
06-PD1-GMP-035-216	F2J250462-010	Soil	X
06-PD1-GMP-035-217	F2J250462-011	Soil	X
06-PD1-GMP-035-218	F2J250462-012	Soil	X
06-PD1-GMP-035-219	F2J250462-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-035-220	F2J250462-014	Soil	X
06-PD1-GMP-059-301	F2J250462-015	Soil	X
06-PD1-GMP-059-302	F2J250462-016	Soil	X
06-PD1-GMP-059-304	F2J250462-017	Soil	X
06-PD1-GMP-059-305	F2J250462-018	Soil	X
06-PD1-GMP-059-306	F2J250462-019	Soil	X
06-PD1-GMP-059-307	F2J250462-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250462 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-035-216 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250462

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2J250463
SAMPLING DATE(S): August 02, 2012 - August 22, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-059-308	F2J250463-001	Soil	X
06-PD1-GMP-059-309	F2J250463-002	Soil	X
06-PD1-GMP-059-310	F2J250463-003	Soil	X
06-PD1-GMP-059-311	F2J250463-004	Soil	X
06-PD1-GMP-059-312	F2J250463-005	Soil	X
06-PD1-GMP-059-313	F2J250463-006	Soil	X
06-PD1-GMP-059-314	F2J250463-007	Soil	X
06-PD1-GMP-059-315	F2J250463-008	Soil	X
06-PD1-GMP-059-316	F2J250463-009	Soil	X
06-PD1-GMP-059-317	F2J250463-010	Soil	X
06-PD1-GMP-059-318	F2J250463-011	Soil	X
06-PD1-GMP-059-319	F2J250463-012	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-059-320	F2J250463-013	Soil	X
06-PD1-GMP-059-325	F2J250463-014	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250463 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-059-311 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250463

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level IV
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250463
SAMPLING DATE(S): August 21, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-075-101	F2J250463-015	Soil	X
06-PD1-GMP-075-102	F2J250463-016	Soil	X
06-PD1-GMP-075-103	F2J250463-017	Soil	X
06-PD1-GMP-075-104	F2J250463-018	Soil	X
06-PD1-GMP-075-105	F2J250463-019	Soil	X
06-PD1-GMP-075-106	F2J250463-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250463 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation, and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-059-311 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

There were no discrepancies noted in Calculation/Transcription Verifications. No data qualification was required.

Data Qualification Summary Table - F2J250463

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250465
SAMPLING DATE(S): August 21, 2012

SAMPLES:

Client <u>Sample ID</u>	Lab <u>Sample ID</u>	Sample <u>Matrix</u>	Gamma <u>Spec.</u>
06-PD1-GMP-075-107	F2J250465-001	Soil	X
06-PD1-GMP-075-108	F2J250465-002	Soil	X
06-PD1-GMP-075-109	F2J250465-003	Soil	X
06-PD1-GMP-075-110	F2J250465-004	Soil	X
06-PD1-GMP-075-111	F2J250465-005	Soil	X
06-PD1-GMP-075-112	F2J250465-006	Soil	X
06-PD1-GMP-075-113	F2J250465-007	Soil	X
06-PD1-GMP-075-114	F2J250465-008	Soil	X
06-PD1-GMP-075-115	F2J250465-009	Soil	X
06-PD1-GMP-075-117	F2J250465-010	Soil	X
06-PD1-GMP-075-118	F2J250465-011	Soil	X
06-PD1-GMP-075-119	F2J250465-012	Soil	X
06-PD1-GMP-075-120	F2J250465-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-075-121	F2J250465-014	Soil	X
06-PD1-GMP-076-101	F2J250465-015	Soil	X
06-PD1-GMP-076-102	F2J250465-016	Soil	X
06-PD1-GMP-076-103	F2J250465-017	Soil	X
06-PD1-GMP-076-104	F2J250465-018	Soil	X
06-PD1-GMP-076-105	F2J250465-019	Soil	X
06-PD1-GMP-076-106	F2J250465-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250465 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation, and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-075-107 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250465

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250467
SAMPLING DATE(S): August 04, 2012 – September 12, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-076-108	F2J250467-001	Soil	X
06-PD1-GMP-076-109	F2J250467-002	Soil	X
06-PD1-GMP-076-110	F2J250467-003	Soil	X
06-PD1-GMP-076-111	F2J250467-004	Soil	X
06-PD1-GMP-076-113	F2J250467-005	Soil	X
06-PD1-GMP-076-114	F2J250467-006	Soil	X
06-PD1-GMP-076-115	F2J250467-007	Soil	X
06-PD1-GMP-076-116	F2J250467-008	Soil	X
06-PD1-GMP-076-117	F2J250467-009	Soil	X
06-PD1-GMP-076-118	F2J250467-010	Soil	X
06-PD1-GMP-076-120	F2J250467-011	Soil	X
06-PD1-GMP-076-124	F2J250467-012	Soil	X
06-PD1-GMP-076-125	F2J250467-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-076-126	F2J250467-014	Soil	X
06-PD1-GMP-077-001	F2J250467-015	Soil	X
06-PD1-GMP-077-002	F2J250467-016	Soil	X
06-PD1-GMP-077-003	F2J250467-017	Soil	X
06-PD1-GMP-077-005	F2J250467-018	Soil	X
06-PD1-GMP-077-006	F2J250467-019	Soil	X
06-PD1-GMP-077-008	F2J250467-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250467 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation, and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-076-108 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250467

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-0130

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2J250468
SAMPLING DATE(S): August 04, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-077-009	F2J250468-001	Soil	X
06-PD1-GMP-077-010	F2J250468-002	Soil	X
06-PD1-GMP-077-011	F2J250468-003	Soil	X
06-PD1-GMP-077-014	F2J250468-004	Soil	X
06-PD1-GMP-077-015	F2J250468-005	Soil	X
06-PD1-GMP-077-016	F2J250468-006	Soil	X
06-PD1-GMP-077-017	F2J250468-007	Soil	X
06-PD1-GMP-077-018	F2J250468-008	Soil	X
06-PD1-GMP-077-019	F2J250468-009	Soil	X
06-PD1-GMP-077-020	F2J250468-010	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250468 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation, and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-077-009 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250468

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2J250469
SAMPLING DATE(S): March 31, 2011 - August 01, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-022-010	F2J250469-001	Soil	X
06-PD1-GMP-022-011	F2J250469-002	Soil	X
06-PD1-GMP-022-012	F2J250469-003	Soil	X
06-PD1-GMP-022-013	F2J250469-004	Soil	X
06-PD1-GMP-022-014	F2J250469-005	Soil	X
06-PD1-GMP-022-015	F2J250469-006	Soil	X
06-PD1-GMP-022-016	F2J250469-007	Soil	X
06-PD1-GMP-022-017	F2J250469-008	Soil	X
06-PD1-GMP-022-018	F2J250469-009	Soil	X
06-PD1-GMP-022-019	F2J250469-010	Soil	X
06-PD1-GMP-022-020	F2J250469-011	Soil	X
06-PD1-GMP-022-021	F2J250469-012	Soil	X
06-PD1-GMP-022-022	F2J250469-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-022-023	F2J250469-014	Soil	X
06-PD1-GMP-022-024	F2J250469-015	Soil	X
06-PD1-GMP-022-025	F2J250469-016	Soil	X
06-PD1-GMP-022-026	F2J250469-017	Soil	X
06-PD1-GMP-022-027	F2J250469-018	Soil	X
06-PD1-GMP-022-028	F2J250469-019	Soil	X
06-PD1-GMP-022-029	F2J250469-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250469 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates for samples 1-15 exceeded the laboratory holding time criteria of 180 days by 397 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-022-010 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250469

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2J250470
SAMPLING DATE(S): August 01, 2012 - September 14, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-022-030	F2J250470-001	Soil	X
06-PD1-GMP-022-031	F2J250470-002	Soil	X
06-PD1-GMP-022-033	F2J250470-003	Soil	X
06-PD1-GMP-022-040	F2J250470-004	Soil	X
06-PD1-GMP-024-204	F2J250470-005	Soil	X
06-PD1-GMP-024-205	F2J250470-006	Soil	X
06-PD1-GMP-024-206	F2J250470-007	Soil	X
06-PD1-GMP-024-208	F2J250470-008	Soil	X
06-PD1-GMP-024-209	F2J250470-009	Soil	X
06-PD1-GMP-024-211	F2J250470-010	Soil	X
06-PD1-GMP-024-212	F2J250470-011	Soil	X
06-PD1-GMP-024-213	F2J250470-012	Soil	X
06-PD1-GMP-024-214	F2J250470-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-024-215	F2J250470-014	Soil	X
06-PD1-GMP-024-216	F2J250470-015	Soil	X
06-PD1-GMP-024-217	F2J250470-016	Soil	X
06-PD1-GMP-024-218	F2J250470-017	Soil	X
06-PD1-GMP-024-219	F2J250470-018	Soil	X
06-PD1-GMP-024-220	F2J250470-019	Soil	X
06-PD1-GMP-024-221	F2J250470-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250470 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-022-030 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250470

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2J250471
SAMPLING DATE(S): August 04, 2012 - September 14, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-024-222	F2J250471-001	Soil	X
06-PD1-GMP-024-225	F2J250471-004	Soil	X
06-PD1-GMP-025-301	F2J250471-005	Soil	X
06-PD1-GMP-025-302	F2J250471-006	Soil	X
06-PD1-GMP-025-303	F2J250471-007	Soil	X
06-PD1-GMP-025-304	F2J250471-008	Soil	X
06-PD1-GMP-025-305	F2J250471-009	Soil	X
06-PD1-GMP-025-307	F2J250471-010	Soil	X
06-PD1-GMP-025-308	F2J250471-011	Soil	X
06-PD1-GMP-025-309	F2J250471-012	Soil	X
06-PD1-GMP-025-310	F2J250471-013	Soil	X
06-PD1-GMP-025-311	F2J250471-014	Soil	X
06-PD1-GMP-025-312	F2J250471-015	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-025-313	F2J250471-016	Soil	X
06-PD1-GMP-025-314	F2J250471-017	Soil	X
06-PD1-GMP-025-315	F2J250471-018	Soil	X
06-PD1-GMP-025-316	F2J250471-019	Soil	X
06-PD1-GMP-025-317	F2J250471-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250471 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-024-222 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250471

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2J250472
SAMPLING DATE(S): August 04, 2012 - September 14, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-025-319	F2J250472-001	Soil	X
06-PD1-GMP-025-321	F2J250472-002	Soil	X
06-PD1-GMP-025-322	F2J250472-003	Soil	X
06-PD1-GMP-025-323	F2J250472-004	Soil	X
06-PD1-GMP-030-301	F2J250472-005	Soil	X
06-PD1-GMP-030-302	F2J250472-006	Soil	X
06-PD1-GMP-030-303	F2J250472-007	Soil	X
06-PD1-GMP-030-304	F2J250472-008	Soil	X
06-PD1-GMP-030-305	F2J250472-009	Soil	X
06-PD1-GMP-030-306	F2J250472-010	Soil	X
06-PD1-GMP-030-307	F2J250472-011	Soil	X
06-PD1-GMP-030-308	F2J250472-012	Soil	X
06-PD1-GMP-030-309	F2J250472-013	Soil	X

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-030-310	F2J250472-014	Soil	X
06-PD1-GMP-030-311	F2J250472-015	Soil	X
06-PD1-GMP-030-312	F2J250472-016	Soil	X
06-PD1-GMP-030-313	F2J250472-017	Soil	X
06-PD1-GMP-030-314	F2J250472-018	Soil	X
06-PD1-GMP-030-315	F2J250472-019	Soil	X
06-PD1-GMP-030-316	F2J250472-020	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250472 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-025-319 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250472

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

VALIDATA

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4070 Balleycastle Lane, Duluth, GA 30097

(770) 232-0130

(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: December 07, 2012
SDG NUMBER: F2J250473
SAMPLING DATE(S): August 02, 2012 - August 04, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample #</u>	<u>Sample #</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-030-317	F2J250473-001	Soil	X
06-PD1-GMP-030-318	F2J250473-002	Soil	X
06-PD1-GMP-030-319	F2J250473-003	Soil	X
06-PD1-GMP-030-320	F2J250473-004	Soil	X
06-PD1-GMP-035-201	F2J250473-005	Soil	X
06-PD1-GMP-035-202	F2J250473-006	Soil	X
06-PD1-GMP-035-203	F2J250473-007	Soil	X
06-PD1-GMP-035-204	F2J250473-008	Soil	X
06-PD1-GMP-035-205	F2J250473-009	Soil	X
06-PD1-GMP-035-206	F2J250473-010	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2J250473 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved “tuna can” geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-030-317 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2J250473

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

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(770) 232-5082 (Fax)

www.datavalidator.com

DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2K150425
SAMPLING DATE(S): October 09, 2012

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-024-228	F2K150425-001	Soil	X
06-PD1-GMP-024-229	F2K150425-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2K150425 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

All Sample Receipt, Preparation, and Holding Time criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

The blank activity exceeded the 2.58 laboratory QC limit in method blank F2K160000-054B for the following isotope:

<u>Isotope</u>	<u>Blank Activity</u>	<u>2s TPU</u>	<u>Z-Score</u>
Lead-214	0.0894 pCi/g	0.0618 pCi/g	2.89

Z_{DER} was calculated to determine the relative difference of sample analyte results with the failed blank analyte result. The affected detected analytes in the associated samples that were demonstrated to be significantly different ($Z_{DER} > 2.58$) did not require data qualification. Associated samples with $Z_{DERs} < 2.58$ are potentially biased high and were qualified as estimated (J).

<u>Client Sample ID</u>	<u>Z-DER</u>	<u>Pass/Fail</u>
06-PD1-GMP-024-228	1.17	Fail
06-PD1-GMP-024-229	1.14	Fail

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-024-228 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2K150425

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
06-PD1-GMP-024-228	F2K150425-001	Lead-214	B6	J
06-PD1-GMP-024-229	F2K150425-002	Lead-214	B6	J

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DATA VALIDATION SUMMARY REPORT

COMPANY: Shaw Environment & Infrastructure, Inc.
SITE NAME: Hunters Point – CTO-006
PROJECT NO.: 136250-056
CONTRACTED LAB: TestAmerica, Inc. – St. Louis, MO
PRIME CONTRACT NO.: N62473-08-D-8822
QA/QC LEVEL: EPA Level III
ANALYTICAL METHODS: EPA 901.1 Modified
VALIDATION GUIDELINES: National Functional Guidelines for Inorganic Data Review,
2010, Laboratory Limits, Professional Judgment
SAMPLE MATRIX: Soil
TYPES OF ANALYSES: Gamma Spectroscopy (Cesium-137, Radium-226 & Daughters)
DATA VALIDATION DATE: January 08, 2013
SDG NUMBER: F2K160444
SAMPLING DATE(S): October 13, 2011

SAMPLES:

Client	Lab	Sample	Gamma
<u>Sample ID</u>	<u>Sample ID</u>	<u>Matrix</u>	<u>Spec.</u>
06-PD1-GMP-071-021	F2K160444-001	Soil	X
06-PD1-GMP-071-022	F2K160444-002	Soil	X

Suffix Codes: D = FIELD DUPLICATE, RE = REANALYSIS, DL = DILUTION,
MS = MATRIX SPIKE, MD = MATRIX DUPLICATE

DATA REVIEWER(S): Thomas B. Granat

PEER REVIEWER(S): Kevin C. Harmon

Definitions of Data Validation Qualifiers

Qualifier	Definition
No qualifier	Confirmed identification. The isotope was positively identified at the reported value. The reported concentration is within the calibrated range of the instrument and the result is not affected by any deficiencies in the associated quality control criteria.
J	The isotope was detected at the reported concentration; the quantitation is an estimate.
R	The result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.
U	Not considered detected. The associated number is the reported concentration.
UJ	Not considered detected. The associated number is the reported concentration, which may be inaccurate or imprecise.

DATA VALIDATION SUMMARY

TestAmerica - SDG F2K160444 - Radiochemistry

ALL ANALYTICAL FRACTIONS

DATA VERIFICATION / COMPLIANCE

Data Package Completeness and Documentation:

The data package met all requirements for completeness criteria. The required documentation was present and complete.

GAMMA SPECTROSCOPY

SUMMARY

I.) General:

The laboratory has cited analytical method EPA 901.1 Modified for the Gamma Spectroscopy analyses.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification.

MAJOR ISSUES

No major issues were encountered in this fraction of the SDG.

MINOR ISSUES / COMPLIANT DATA

I.) Sample Receipt, Preparation and Holding Times:

The sample analysis dates exceeded the laboratory holding time criteria of 180 days by 244-245 days. Due to the relatively long half-lives of the isotopes of concern, this exceedance should not adversely affect sample results. In the validator's professional judgment, no data qualification was necessary.

All other Sample Receipt and Preparation criteria were met. No data qualification was necessary.

Note: Radium-226 is reported in these samples from the 609 keV line of Bismuth-214. The samples have not gone through the routine laboratory sample preparation process of drying and grinding the sample prior to filling the container. To promote the 21 day ingrowth period where Bismuth-214 reaches secular equilibrium with Radon-222 and the parent Radium-226, the samples were counted by the lab as received from the client in the lab approved "tuna can" geometry.

II.) Instrument Performance:

All Instrument Performance criteria met laboratory requirements. No data qualification was necessary.

III.) Calibration:

All Calibration criteria met laboratory requirements. No data qualification was necessary.

IV.) Background Level:

All Background Level criteria met laboratory requirements. No data qualification was necessary.

V.) Blanks:

All Blank criteria met laboratory requirements. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

All LCS criteria met laboratory requirements. No data qualification was necessary.

VII.) Laboratory Duplicate (MD):

MD sample analysis was performed on sample 06-PD1-GMP-071-021 of this SDG. All MD criteria met laboratory requirements. No data qualification was required.

VIII.) Field Duplicate (FD):

There were no Field Duplicates for Gamma Spectroscopy included in this SDG. No data qualification was required.

IX.) Matrix Spike Recovery (MS):

MS sample analysis is not required for Gamma Spectroscopy analysis on this project.

X.) Chemical Yield:

No tracers or chemical carriers are employed in Gamma Spectroscopy analysis. No data qualification was required.

XI.) Nuclide Identification and Interferences:

All data validation criteria pertaining to Nuclide Identification and Interferences were met. No data qualification was necessary.

XII.) Detection Decisions and Critical Values (CV):

All Detection Decisions and CV criteria were met. No data qualification was required.

XIII.) Performance Evaluation Samples:

No Performance Evaluation Samples were submitted. No data qualification was required.

XIV.) Calculation/Transcription Verifications:

This criterion was not evaluated for Level III.

Data Qualification Summary Table - F2K160444

Field Sample ID	Laboratory Sample ID	Isotope	Reason Code	Validated Qualifier
N/A	N/A	N/A	N/A	None

Appendix H
Work Area 24 Report Index

Hunters Point Naval Shipyard, San Francisco, California
Contract Number: N62473-08-D-8822, Task Order: 0006

Work Area 24 Reports

Date	Document Control Number	Title
March 2013	SHAW-8822-0006-0423	FINAL, FINAL STATUS SURVEY REPORT Former Building 313, 313A, and 322 Sites
October 2012	SHAW-8822-0006-0394	FINAL, FINAL STATUS SURVEY REPORT Parcel D-1 Building 274
September 2012	SHAW-8822-0006-0391	FINAL WORK PACKAGE 102 SURVEY UNIT 250 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0391	FINAL WORK PACKAGE 102, SURVEY UNIT 251 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0395	FINAL WORK PACKAGE 103, SURVEY UNIT 252 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0401	FINAL WORK PACKAGE 105, SURVEY UNIT 253 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
January 2013	SHAW-8822-0006-0330.R1	FINAL WORK PACKAGE 107, SURVEY UNIT 254 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0401	FINAL WORK PACKAGE 105, SURVEY UNIT 255 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
January 2013	SHAW-8822-0006-0330.R1	FINAL WORK PACKAGE 107, SURVEY UNIT 256 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0395	FINAL WORK PACKAGE 103, SURVEY UNIT 257 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0395	FINAL WORK PACKAGE 103, SURVEY UNIT 259 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0395	FINAL WORK PACKAGE 103, SURVEY UNIT 261 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0390	FINAL WORK PACKAGE 101, SURVEY UNIT 264 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
January 2013	SHAW-8822-0006-0330.R1	FINAL WORK PACKAGE 107, SURVEY UNIT 265 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0391	FINAL WORK PACKAGE 102, SURVEY UNIT 272 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0391	FINAL WORK PACKAGE 102, SURVEY UNIT 273 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0390	FINAL WORK PACKAGE 101, SURVEY UNIT 274 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0390	FINAL WORK PACKAGE 101, SURVEY UNIT 277 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal

Appendix I
Work Area 25 Report Index

Hunters Point Naval Shipyard, San Francisco, California
Contract Number: N62473-08-D-8822, Task Order: 0006

Work Area 25 Reports

Date	Document Control Number	Title
January 2013	SHAW-8822-0006-0330.R1	FINAL WORK PACKAGE 107 SURVEY UNIT 283 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal

Appendix J
Work Area 28 Report Index

Hunters Point Naval Shipyard, San Francisco, California
Contract Number: N62473-08-D-8822, Task Order: 0006

Work Area 28 Reports

Date	Document Control Number	Title
March 2013	SHAW-8822-0006-0422	FINAL, FINAL STATUS SURVEY REPORT Building 383 Area
September 2012	SHAW-8822-0006-0396	FINAL WORK PACKAGE 104, SURVEY UNIT 258 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0401	FINAL WORK PACKAGE 105, SURVEY UNIT 262 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0401	FINAL WORK PACKAGE 105, SURVEY UNIT 270 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0402	FINAL WORK PACKAGE 106, SURVEY UNIT 271 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0390	FINAL WORK PACKAGE 101, SURVEY UNIT 276 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0395	FINAL WORK PACKAGE 103, SURVEY UNIT 278 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0402	FINAL WORK PACKAGE 106, SURVEY UNIT 279 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0402	FINAL WORK PACKAGE 106, SURVEY UNIT 280 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0402	FINAL WORK PACKAGE 106, SURVEY UNIT 281 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
October 2012	SHAW-8822-0006-0402	FINAL WORK PACKAGE 106, SURVEY UNIT 282 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
January 2014	SHAW-8822-0006-0436	FINAL, FINAL STATUS SURVEY REPORT Gun Mole Pier Area

Appendix K
Work Area 29 Report Index

Hunters Point Naval Shipyard, San Francisco, California
Contract Number: N62473-08-D-8822, Task Order: 0006

Work Area 29 Reports

Date	Document Control Number	Title
October 2012	SHAW-8822-0006-0401	FINAL WORK PACKAGE 105, SURVEY UNIT 266 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0390	FINAL WORK PACKAGE 101, SURVEY UNIT 267 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0396	FINAL WORK PACKAGE 104, SURVEY UNIT 268 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0396	FINAL WORK PACKAGE 104, SURVEY UNIT 269 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0391	FINAL WORK PACKAGE 102, SURVEY UNIT 275 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal

Appendix L
Work Area 30 Report Index

Hunters Point Naval Shipyard, San Francisco, California
Contract Number: N62473-08-D-8822, Task Order: 0006

Work Area 30 Reports

Date	Document Control Number	Title
September 2012	SHAW-8822-0006-0396	FINAL WORK PACKAGE 104, SURVEY UNIT 260 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
September 2012	SHAW-8822-0006-0396	FINAL WORK PACKAGE 104, SURVEY UNIT 263 PROJECT REPORT Parcel D-1 Storm Drain and Sanitary Sewer Removal
June 2013	SHAW-8822-0006-0430	FINAL, FINAL STATUS SURVEY REPORT South Pier Area

Appendix M
Radiological Data for Sediment Samples
Collected from Parcel D-1 Piping

Sample description
 Parcel D1 06-PD1PI-0001-001 353g
 11/04/10 11:15

Acquisition information

Start time: 29-Nov-2010 16:30:10
 Live time: 5400
 Real time: 5408

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	4.0520E-01	1.4564E-01	1.4831E-01	0.143E+00
AM-241 #A	1.8461E-03	2.2039E-01	2.2039E-01	0.185E+00
Bi-212	5.0353E-01	2.7422E-01	2.7636E-01	0.195E+00
BI-214	8.1502E-01	1.2682E-01	1.3792E-01	0.462E-01
CO-60 #A	-3.4998E-02	1.1712E-01	1.1714E-01	0.263E-01
CS-137	1.0594E-01	4.4282E-02	4.4851E-02	0.324E-01
EU-152 C	1.1016E-01	1.0076E-01	1.0119E-01	0.866E-01
EU-154 A	5.7520E-02	6.4908E-02	6.5091E-02	0.667E-01
K-40	1.9084E+01	1.2798E+00	1.8441E+00	0.154E+00
Pa-234 C	1.5058E-01	1.0250E-01	1.0303E-01	0.805E-01
Pb-210 #C	0.0000E+00	6.2663E+00	6.2663E+00	0.000E+00
Pb-212	4.5484E-01	8.2498E-02	8.9473E-02	0.583E-01
PB-214	6.7759E-01	1.3546E-01	1.4394E-01	0.649E-01
RA-226 A	2.5944E-01	8.4718E-01	8.4741E-01	0.700E+00
Th-230 #A	-1.8159E+01	1.2411E+01	1.2411E+01	0.549E+01
Th-234 #A	-1.0166E-01	1.4659E+00	1.4659E+00	0.117E+01
TI-208	2.1019E-01	5.2657E-02	5.4466E-02	0.248E-01
U-235 C	6.3991E-02	7.7434E-02	7.7585E-02	0.443E-01

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- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.226E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-002 348g
 11/04/10 11:30

Acquisition information

Start time: 29-Nov-2010 16:31:23
 Live time: 5400
 Real time: 5405

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228	2.5326E-01	1.4942E-01	1.5044E-01	0.792E-01
AM-241 A	4.9794E-02	6.9323E-02	6.9464E-02	0.557E-01
Bi-212 C	2.9978E-01	2.7423E-01	2.7499E-01	0.205E+00
BI-214	1.0309E+00	1.5786E-01	1.7211E-01	0.599E-01
CO-60 #A	-3.7240E-02	1.7619E-01	1.7621E-01	0.213E-01
CS-137	5.3627E-02	4.3285E-02	4.3435E-02	0.330E-01
EU-152 #A	-3.3889E-01	1.4624E+00	1.4627E+00	0.935E-01
EU-154 C	1.1228E-01	1.0414E-01	1.0457E-01	0.567E-01
K-40	1.9472E+01	1.4562E+00	1.9889E+00	0.627E+00
Pa-234	3.5193E-01	2.1624E-01	2.1760E-01	0.163E+00
Pb-210	1.0628E+00	7.4084E-01	7.4549E-01	0.591E+00
Pb-212	1.3179E-01	7.6138E-02	7.6796E-02	0.624E-01
PB-214	9.7190E-01	1.3047E-01	1.4798E-01	0.561E-01
RA-226	1.1059E+00	9.0621E-01	9.1005E-01	0.734E+00
Th-230 #A	-4.7823E+00	6.8117E+00	6.8117E+00	0.170E+01
Th-234	1.5603E+00	1.3477E+00	1.3560E+00	0.947E+00
TI-208 #A	-4.0862E-01	3.8089E-01	3.8185E-01	0.724E-01
U-235 C	9.4186E-02	6.3965E-02	6.4360E-02	0.515E-01

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- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 2.599E+01 pCi /g

Laboratory: New World Technology

ORTEC g v - i (3263) Npp32 G53W3.10 29-NOV-2010 23:56:15
 New World Technology Spectrum name: 2S000205.An1

Sample description
 Parcel D1 06-PD1PI-0002-001 342g
 11/09/10 10:00

Acquisition information
 Start time: 29-Nov-2010 23:09:04
 Live time: 2700
 Real time: 2704

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	C	4.8092E-01	2.4428E-01	2.4653E-01	0.213E+00
AM-241	A	1.4464E-01	4.1524E-01	4.1544E-01	0.343E+00
Bi-212	A	3.0294E-01	2.5220E-01	2.5304E-01	0.374E+00
BI-214		6.6827E-01	1.6755E-01	1.7335E-01	0.630E-01
CO-60	#A	-4.3425E-02	1.6530E-01	1.6532E-01	0.339E-01
CS-137		9.2101E-02	5.6928E-02	5.7264E-02	0.418E-01
EU-152	A	3.5117E-02	4.4743E-02	4.4842E-02	0.131E+00
EU-154	#A	7.1506E-02	4.5859E-02	4.6257E-02	0.844E-01
K-40		1.6719E+01	1.7061E+00	2.0649E+00	0.199E+00
Pa-234		2.4764E-01	1.8362E-01	1.8442E-01	0.181E+00
Pb-210	#C	0.0000E+00	5.3398E+00	5.3398E+00	0.000E+00
Pb-212		4.1028E-01	1.1683E-01	1.2093E-01	0.817E-01
PB-214		7.1217E-01	1.7653E-01	1.8379E-01	0.747E-01
RA-226		9.5805E-01	1.0753E+00	1.0777E+00	0.856E+00
Th-230	#A	-1.1170E+01	6.2270E+01	6.2299E+01	0.148E+02
Th-234	A	3.1276E-01	2.0074E+00	2.0076E+00	0.173E+01
TI-208		2.6342E-01	7.3395E-02	7.5441E-02	0.284E-01
U-235	A	2.7374E-02	1.0213E-01	1.0216E-01	0.662E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 1.911E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-003 334g
 11/04/10 13:30

Acquisition information

Start time: 29-Nov-2010 19:04:14
 Live time: 5400
 Real time: 5407

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228 C	1.6786E-01	1.6409E-01	1.6450E-01	0.151E+00
AM-241 #A	4.6827E-02	3.7258E-01	3.7261E-01	0.266E+00
Bi-212	5.1309E-01	2.7098E-01	2.7322E-01	0.190E+00
BI-214	1.0345E+00	1.4887E-01	1.6401E-01	0.559E-01
CO-60 #A	-5.1548E-02	9.1847E-01	9.1848E-01	0.268E-01
CS-137	6.2830E-02	4.3084E-02	4.3291E-02	0.340E-01
EU-152 C	1.4534E-01	8.4772E-02	8.5663E-02	0.971E-01
EU-154 #C	1.9074E-01	1.1267E-01	1.1383E-01	0.719E-01
K-40	2.3541E+01	1.4549E+00	2.1907E+00	0.192E+00
Pa-234 C	1.1349E-01	1.0671E-01	1.0700E-01	0.103E+00
Pb-210 #C	0.0000E+00	7.9036E+00	7.9036E+00	0.000E+00
Pb-212	2.3436E-01	7.6916E-02	7.8959E-02	0.601E-01
PB-214	9.3443E-01	1.5675E-01	1.7052E-01	0.683E-01
RA-226 #A	-1.3472E-02	9.7428E-01	9.7429E-01	0.750E+00
Th-230 #A	-1.1826E+01	7.2882E+01	7.2910E+01	0.136E+02
Th-234 #A	-9.1457E-02	1.8466E+00	1.8466E+00	0.124E+01
TI-208	1.5633E-01	5.6512E-02	5.7453E-02	0.279E-01
U-235	7.3690E-02	8.0585E-02	8.0778E-02	0.465E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.648E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-004 309g
 11/04/10 13:40

Acquisition information

Start time: 29-Nov-2010 19:04:37
 Live time: 5400
 Real time: 5405

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	8.6536E-01	2.8115E-01	2.8744E-01	0.113E+00
AM-241 #	7.4920E-02	8.7095E-02	8.7350E-02	0.625E-01
Bi-212 #A	-2.7821E-02	1.4460E-01	1.4461E-01	0.242E+00
BI-214	5.0651E-01	1.2234E-01	1.2689E-01	0.555E-01
CO-60 #A	6.3821E-03	3.5604E-02	3.5607E-02	0.292E-01
CS-137	7.1910E-02	4.9694E-02	4.9928E-02	0.373E-01
EU-152 A	-2.2238E-01	3.7691E-01	3.7738E-01	0.105E+00
EU-154 C	1.8368E-01	1.1465E-01	1.1570E-01	0.597E-01
K-40	1.1674E+01	1.2693E+00	1.5069E+00	0.697E+00
Pa-234 C	2.7914E-01	1.9346E-01	1.9442E-01	0.111E+00
Pb-210 #	1.5539E+00	9.5028E-01	9.5803E-01	0.606E+00
Pb-212	3.3061E-01	8.8979E-02	9.2471E-02	0.674E-01
PB-214	5.1213E-01	1.3431E-01	1.3926E-01	0.692E-01
RA-226 #A	-1.2038E-01	1.4672E+00	1.4673E+00	0.882E+00
Th-230 #A	-1.1470E+00	1.4694E+01	1.4695E+01	0.662E+01
Th-234 #A	-2.1787E+00	5.7385E+00	5.7423E+00	0.118E+01
TI-208 #A	-4.4286E-01	3.1512E-01	3.1648E-01	0.796E-01
U-235	1.2295E-01	8.0235E-02	8.0772E-02	0.530E-01

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- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 1.564E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-005 346g
 11/08/10 13:45

Acquisition information
 Start time: 29-Nov-2010 20:41:16
 Live time: 2700
 Real time: 2704

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	A	-4.4548E-02	4.7304E-02	4.7404E-02	0.208E+00
AM-241	A	4.1280E-02	3.6497E-01	3.6499E-01	0.308E+00
Bi-212	C	7.8129E-01	3.7068E-01	3.7448E-01	0.318E+00
BI-214		5.0528E-01	1.4066E-01	1.4462E-01	0.775E-01
CO-60	#A	-3.7985E-02	1.7707E-01	1.7708E-01	0.375E-01
CS-137	A	3.9147E-02	5.9778E-02	5.9836E-02	0.490E-01
EU-152	#A	-4.7489E-02	1.6997E-01	1.7002E-01	0.101E+00
EU-154	C	1.0480E-01	5.9818E-02	6.0473E-02	0.683E-01
K-40		1.6415E+01	1.6354E+00	1.9947E+00	0.949E-01
Pa-234	#	1.6032E-01	1.4716E-01	1.4758E-01	0.100E+00
Pb-210	#C	0.0000E+00	2.8101E+00	2.8101E+00	0.000E+00
Pb-212		2.9935E-01	1.1054E-01	1.1287E-01	0.836E-01
PB-214		6.6479E-01	1.7292E-01	1.7939E-01	0.769E-01
RA-226	A	4.5385E-01	1.1162E+00	1.1167E+00	0.914E+00
Th-230	#A	-1.8527E+01	1.5682E+01	1.5682E+01	0.792E+01
Th-234	#A	-9.2857E-02	1.9469E+00	1.9469E+00	0.158E+01
TI-208		1.4898E-01	8.2512E-02	8.3100E-02	0.399E-01
U-235	A	5.7136E-02	9.2247E-02	9.2348E-02	0.644E-01

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- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 1.819E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-006 347g
 11/08/10 13:50

Acquisition information

Start time: 29-Nov-2010 21:32:42
 Live time: 5400
 Real time: 5405

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	7.2405E-01	1.7238E-01	1.7950E-01	0.629E-01
AM-241 #A	-7.5685E-03	6.2303E-02	6.2303E-02	0.759E-02
Bi-212	5.4902E-01	3.0585E-01	3.0812E-01	0.212E+00
BI-214 #	6.6885E-01	1.4557E-01	1.5222E-01	0.576E-01
CO-60 #A	2.6792E-02	4.2444E-02	4.2483E-02	0.291E-01
CS-137	1.0580E-01	4.8246E-02	4.8767E-02	0.343E-01
EU-152 A	-1.4876E-01	3.1599E-01	3.1624E-01	0.832E-01
EU-154 C	8.5032E-02	7.5038E-02	7.5383E-02	0.519E-01
K-40	1.2672E+01	1.2298E+00	1.5131E+00	0.628E+00
Pa-234 C	2.3400E-01	1.7950E-01	1.8023E-01	0.475E-01
Pb-210	7.6489E-01	7.2285E-01	7.2533E-01	0.509E+00
Pb-212	2.5271E-01	7.7353E-02	7.9710E-02	0.597E-01
PB-214	5.4129E-01	1.5200E-01	1.5690E-01	0.693E-01
RA-226 A	2.5139E-01	8.1847E-01	8.1869E-01	0.686E+00
Th-230 #A	-6.5502E-01	8.0147E+00	8.0155E+00	0.487E+01
Th-234	3.0257E+00	1.0654E+00	1.1042E+00	0.879E+00
TI-208 #A	-3.6729E-01	3.0553E-01	3.0650E-01	0.732E-01
U-235 C	7.2367E-02	6.2055E-02	6.2296E-02	0.472E-01

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- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 1.930E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-007 360g
 11/08/10 14:00

Acquisition information

Start time: 29-Nov-2010 21:32:22
 Live time: 2700
 Real time: 2704

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228 C	3.7616E-01	1.5828E-01	1.6041E-01	0.211E+00
AM-241 #A	-1.0203E-01	1.5326E+00	1.5327E+00	0.305E+00
Bi-212	5.2862E-01	2.6953E-01	2.7193E-01	0.129E+00
BI-214	2.9177E-01	1.3155E-01	1.3298E-01	0.747E-01
CO-60 #A	-3.4682E-02	1.3276E-01	1.3278E-01	0.346E-01
CS-137	8.1009E-02	6.0563E-02	6.0807E-02	0.461E-01
EU-152 C	2.0920E-01	1.0663E-01	1.0809E-01	0.125E+00
EU-154 C	9.6691E-02	7.5247E-02	7.5691E-02	0.731E-01
K-40	1.9993E+01	1.8085E+00	2.2815E+00	0.189E+00
Pa-234 C	1.9562E-01	1.0558E-01	1.0644E-01	0.116E+00
Pb-210 #C	0.0000E+00	5.0707E+00	5.0707E+00	0.000E+00
Pb-212	2.5072E-01	9.8187E-02	1.0003E-01	0.749E-01
PB-214	4.9003E-01	1.7272E-01	1.7627E-01	0.813E-01
RA-226 A	3.5656E-01	1.1908E+00	1.1911E+00	0.979E+00
Th-230 #A	9.4127E+00	2.3923E+01	2.3976E+01	0.172E+02
Th-234 A	6.5336E-01	2.0564E+00	2.0573E+00	0.151E+01
TI-208	2.0087E-01	6.5871E-02	6.7201E-02	0.298E-01
U-235 A	5.4136E-02	6.4930E-02	6.5059E-02	0.593E-01

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- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.184E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-008 363g
 11/08/10 14:05

Acquisition information

Start time: 29-Nov-2010 22:20:48
 Live time: 2700
 Real time: 2704

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228 C	4.2779E-01	1.4982E-01	1.5270E-01	0.199E+00
AM-241 #A	-1.7115E-01	3.9579E+00	3.9579E+00	0.154E+00
Bi-212	7.1731E-01	3.2623E-01	3.2987E-01	0.207E+00
BI-214	4.4794E-01	1.4095E-01	1.4407E-01	0.864E-01
CO-60 #A	-3.6206E-02	2.2934E-01	2.2935E-01	0.387E-01
CS-137	8.4620E-02	6.0744E-02	6.1009E-02	0.460E-01
EU-152 A	8.0263E-02	9.3165E-02	9.3413E-02	0.121E+00
EU-154 A	4.9252E-02	5.0931E-02	5.1101E-02	0.786E-01
K-40	1.0197E+01	2.1426E+00	2.2570E+00	0.143E+01
Pa-234	3.7200E-01	2.8181E-01	2.8298E-01	0.177E+00
Pb-210 #C	0.0000E+00	1.8592E+00	1.8592E+00	0.000E+00
Pb-212	3.1189E-01	1.0483E-01	1.0748E-01	0.780E-01
PB-214	5.7519E-01	1.5445E-01	1.5988E-01	0.715E-01
RA-226 #A	-3.6131E-02	1.5013E+00	1.5013E+00	0.991E+00
Th-230 #A	-1.7243E+00	2.6950E+01	2.6952E+01	0.171E+02
Th-234	1.8092E+00	2.1038E+00	2.1109E+00	0.149E+01
TI-208	1.4218E-01	6.5154E-02	6.5831E-02	0.335E-01
U-235	1.4091E-01	1.0876E-01	1.0928E-01	0.555E-01

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- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 1.299E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0001-009 339g
 11/08/10 14:15

Acquisition information

Start time: 30-Nov-2010 07:44:32
 Live time: 5400
 Real time: 5405

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228 #	7.3637E-01	2.4095E-01	2.4627E-01	0.101E+00
AM-241 A	6.7973E-02	8.7654E-02	8.7863E-02	0.706E-01
Bi-212	5.4954E-01	3.0477E-01	3.0705E-01	0.219E+00
BI-214	6.6423E-01	1.0516E-01	1.1406E-01	0.508E-01
CO-60 #	5.2979E-02	6.4916E-02	6.5015E-02	0.344E-01
CS-137	7.7480E-02	5.0744E-02	5.1010E-02	0.382E-01
EU-152 A	-1.6553E-01	1.8572E-01	1.8625E-01	0.994E-01
EU-154 C	6.8675E-02	7.7360E-02	7.7578E-02	0.588E-01
K-40	1.3380E+01	1.2828E+00	1.5850E+00	0.641E+00
Pa-234	3.1744E-01	2.0802E-01	2.0917E-01	0.164E+00
Pb-210	1.2074E+00	8.3174E-01	8.3708E-01	0.558E+00
Pb-212	4.2211E-01	8.8790E-02	9.4427E-02	0.647E-01
PB-214	5.8986E-01	1.6043E-01	1.6593E-01	0.761E-01
RA-226 A	7.1456E-01	9.6288E-01	9.6440E-01	0.792E+00
Th-230 #A	-1.4887E+00	1.0851E+01	1.0854E+01	0.488E+01
Th-234 A	7.8266E-01	1.1367E+00	1.1391E+00	0.985E+00
TI-208 #A	-4.1803E-01	3.9569E-01	3.9665E-01	0.756E-01
U-235 C	7.7026E-02	5.7976E-02	5.8268E-02	0.535E-01

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- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 1.794E+01 pCi /g

Laboratory: New World Technology

TetraTech Hunter's Point Lab

Sample ID: 06-PD1PI-0005-001
 Sample Description: Parcel D1

 Detector: HPGe #2 50-TP42229A Spectrum ID: 2_20110202_017
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: PD1PI Matrix: S
 Sample Time: 1/17/11 10:30 Live Time: 5400 sec
 Acquisition Time: 2/2/11 20:06:29 Real Time: 5404 sec
 Analysis Time: 2/2/11 21:36 Dead Time: 0.07 %
 Analysis Quantity: 2.510E+02 g

Efficiency: HPGe #2 Tuna Can Soil Solid 83489-918
 Efficiency Cal Date: 1/19/11 21:26
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228		5.481E-01	20.71	1.135E-01	1.197E-01	3.134E-02
AM-241	#AB	-3.546E-02	668.20	2.370E-01	2.370E-01	1.935E-01
Bi-212		4.566E-01	41.52	1.895E-01	1.921E-01	1.128E-01
BI-214		4.588E-01	18.51	8.491E-02	9.027E-02	3.212E-02
CO-60	#AB	0.000E+00	2000.00	3.444E-03	3.444E-03	4.314E-02
CS-137		2.599E-01	16.34	4.246E-02	4.594E-02	1.231E-02
EU-152		5.567E-02	95.05	5.292E-02	5.313E-02	4.033E-02
EU-154	#AB	-1.509E-04	52180.00	7.872E-02	7.872E-02	6.483E-02
K-40		1.651E+01	6.56	1.083E+00	1.585E+00	2.051E-01
Pa-234	#AB	8.497E-03	909.60	7.729E-02	7.729E-02	6.322E-02
Pb-210	#	0.000E+00	149.20	4.957E+00	4.968E+00	0.000E+00
Pb-212		5.728E-01	14.25	8.159E-02	9.259E-02	3.823E-02
Pb-214		4.731E-01	16.93	8.009E-02	8.705E-02	3.496E-02
RA-226	AB	3.453E-01	140.70	4.858E-01	4.865E-01	3.838E-01
Th-230	#AB	-4.369E+00	349.50	1.527E+01	1.529E+01	1.240E+01
Th-234	#	2.358E+00	38.14	8.992E-01	9.273E-01	6.361E-01
Tl-208		2.243E-01	17.95	4.026E-02	4.293E-02	1.332E-02
U-235		6.210E-02	65.09	4.042E-02	4.069E-02	2.458E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 2.233E+01

Analyst: Chanthachone Alexander

Reviewer: Philip Smith
 Review Date: 2/3/11 07:44

Sample description
 Parcel D1 06-PD1PI -0003-002 373g
 11/10/10 11:00

Acquisition information
 Start time: 30-Nov-2010 11:38:38
 Live time: 2700
 Real time: 2703

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nucl ide		Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	#	5.7183E-01	2.6200E-01	2.6496E-01	0.108E+00
AM-241	A	1.8800E-02	1.0685E-01	1.0686E-01	0.875E-01
Bi -212	C	3.4468E-01	3.2601E-01	3.2685E-01	0.267E+00
BI -214	#	9.1865E-01	1.8985E-01	1.9944E-01	0.693E-01
CO-60	#A	9.5771E-03	2.7619E-02	2.7626E-02	0.317E-01
CS-137	A	2.9757E-02	5.4145E-02	5.4182E-02	0.427E-01
EU-152	A	-1.6449E-01	1.3430E-01	1.3502E-01	0.138E+00
EU-154	C	7.4890E-02	1.0285E-01	1.0305E-01	0.743E-01
K-40		1.2520E+01	1.8004E+00	2.0001E+00	0.910E+00
Pa-234	A	4.8312E-02	7.3670E-02	7.3746E-02	0.769E-01
Pb-210		1.3845E+00	9.9102E-01	9.9692E-01	0.772E+00
Pb-212		3.8593E-01	1.1281E-01	1.1657E-01	0.812E-01
PB-214		5.8678E-01	1.5810E-01	1.6362E-01	0.774E-01
RA-226		1.1520E+00	1.1786E+00	1.1818E+00	0.950E+00
Th-230	A	1.0602E-01	1.0154E+01	1.0154E+01	0.854E+01
Th-234		2.9579E+00	1.7417E+00	1.7647E+00	0.123E+01
TI -208	#A	-3.0025E-01	2.5248E-01	2.5326E-01	0.101E+00
U-235	A	3.1330E-02	3.7736E-02	3.7810E-02	0.693E-01

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- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 1.933E+01 pCi /g

Laboratory: New World Technology

ORTEC g v - i (3263) Npp32 G53W3.10 30-NOV-2010 13:42:55
 New World Technology Spectrum name: 2S000210.An1

Sample description
 Parcel D1 06-PD1PI -0003-003 347g
 11/10/10 12:50

Acquisition information
 Start time: 30-Nov-2010 12:55:51
 Live time: 2700
 Real time: 2704

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	4.7151E-01	1.9112E-01	1.9388E-01	0.207E+00
AM-241 #A	-5.3837E-02	4.5921E-01	4.5924E-01	0.223E+00
Bi -212	4.5135E-01	3.7129E-01	3.7256E-01	0.266E+00
BI -214	6.4749E-01	1.6042E-01	1.6610E-01	0.609E-01
CO-60 #A	-4.6208E-02	3.7974E-01	3.7975E-01	0.355E-01
CS-137	8.5249E-02	5.6058E-02	5.6350E-02	0.417E-01
EU-152 A	6.5960E-02	7.7556E-02	7.7757E-02	0.126E+00
EU-154 A	6.2806E-02	7.6722E-02	7.6906E-02	0.811E-01
K-40	1.5312E+01	1.5772E+00	1.9033E+00	0.946E-01
Pa-234	5.0165E-01	2.8884E-01	2.9091E-01	0.123E+00
Pb-210 #C	0.0000E+00	2.3580E+00	2.3580E+00	0.000E+00
Pb-212	3.6077E-01	1.1940E-01	1.2252E-01	0.780E-01
PB-214	4.5265E-01	1.3030E-01	1.3430E-01	0.769E-01
RA-226 #A	-3.5637E-02	1.5420E+00	1.5420E+00	0.103E+01
Th-230 #A	3.7320E+00	2.3353E+01	2.3361E+01	0.176E+02
Th-234 #A	-3.5212E-01	2.3694E+00	2.3697E+00	0.145E+01
TI -208	2.3429E-01	6.4260E-02	6.6107E-02	0.307E-01
U-235	8.4062E-02	8.3116E-02	8.3359E-02	0.591E-01

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- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 1.860E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0003-004 353g
 11/10/10 13:30

Acquisition information

Start time: 30-Nov-2010 15:19:26
 Live time: 5400
 Real time: 5405

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228	8.5357E-01	2.1086E-01	2.1895E-01	0.797E-01
AM-241 A	1.3586E-02	8.8980E-02	8.8988E-02	0.731E-01
Bi-212	3.8992E-01	3.1361E-01	3.1473E-01	0.237E+00
BI-214	5.4933E-01	1.1627E-01	1.2188E-01	0.510E-01
CO-60 #A	2.1731E-02	1.8058E-02	1.8118E-02	0.292E-01
CS-137	1.1827E-01	4.1933E-02	4.2680E-02	0.272E-01
EU-152 A	-2.3122E-01	3.7090E-01	3.7142E-01	0.825E-01
EU-154 C	1.4395E-01	9.8457E-02	9.9209E-02	0.503E-01
K-40	1.0990E+01	1.1714E+00	1.3988E+00	0.622E+00
Pa-234	4.9731E-01	2.8312E-01	2.8519E-01	0.170E+00
Pb-210	1.4455E+00	7.0950E-01	7.1846E-01	0.553E+00
Pb-212	3.5880E-01	8.3861E-02	8.8199E-02	0.622E-01
PB-214	5.0954E-01	9.8201E-02	1.0480E-01	0.598E-01
RA-226	9.6136E-01	8.5934E-01	8.6241E-01	0.699E+00
Th-230 #A	-4.7146E+00	5.3908E+00	5.3908E+00	0.167E+01
Th-234 #A	-1.6466E+00	3.8345E+00	3.8378E+00	0.103E+01
TI-208 #A	-3.2339E-01	2.0896E-01	2.1005E-01	0.698E-01
U-235 C	5.7109E-02	7.9749E-02	7.9866E-02	0.487E-01

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- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 1.667E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0004-003 304g
 11/12/10 09:00

Acquisition information

Start time: 30-Nov-2010 20:18:42
 Live time: 5400
 Real time: 5405

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228	9.0881E-01	3.0923E-01	3.1554E-01	0.129E+00
AM-241 A	3.4331E-02	8.4603E-02	8.4658E-02	0.689E-01
Bi-212 A	2.2016E-01	3.1573E-01	3.1608E-01	0.249E+00
BI-214	5.9985E-01	1.3951E-01	1.4510E-01	0.598E-01
CO-60 #A	-4.3600E-03	4.7060E-03	4.7152E-03	0.233E-01
CS-137	2.2332E-01	5.3986E-02	5.6034E-02	0.308E-01
EU-152 A	-3.4936E-01	9.6858E-01	9.6904E-01	0.110E+00
EU-154 A	5.8156E-02	7.9203E-02	7.9356E-02	0.662E-01
K-40	1.3518E+01	1.3716E+00	1.6631E+00	0.718E+00
Pa-234 #C	2.6215E-01	2.0691E-01	2.0770E-01	0.148E+00
Pb-210	2.3282E+00	9.6836E-01	9.8534E-01	0.631E+00
Pb-212	4.7762E-01	9.6205E-02	1.0285E-01	0.693E-01
PB-214	5.6276E-01	1.1267E-01	1.1970E-01	0.694E-01
RA-226	1.4270E+00	1.0111E+00	1.0168E+00	0.814E+00
Th-230 #A	-2.9111E+00	2.7719E+01	2.7724E+01	0.718E+01
Th-234 #	4.7390E+00	1.7196E+00	1.7788E+00	0.108E+01
TI-208 A	-4.1623E-01	2.5214E-01	2.5364E-01	0.830E-01
U-235 A	2.4952E-02	4.3083E-02	4.3125E-02	0.606E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 2.478E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI -0002-002 354g
 11/09/10 11:30

Acquisition information
 Start time: 29-Nov-2010 23:57:54
 Live time: 2700
 Real time: 2704

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228 C	4.3097E-01	2.3612E-01	2.3799E-01	0.198E+00
AM-241 #A	2.7982E-01	5.3353E-01	5.3411E-01	0.355E+00
Bi-212 #	8.7664E-01	4.6965E-01	4.7343E-01	0.212E+00
BI-214	6.0949E-01	1.4734E-01	1.5282E-01	0.728E-01
CO-60 #A	-4.7150E-02	3.7358E-01	3.7359E-01	0.332E-01
CS-137	9.8780E-02	5.9425E-02	5.9795E-02	0.435E-01
EU-152 C	1.8115E-01	9.3138E-02	9.4395E-02	0.112E+00
EU-154 A	6.3597E-02	7.1335E-02	7.1538E-02	0.950E-01
K-40	1.7701E+01	1.7232E+00	2.1180E+00	0.195E+00
Pa-234 #C	2.8009E-01	1.7493E-01	1.7600E-01	0.167E+00
Pb-210 #C	0.0000E+00	2.5555E+00	2.5555E+00	0.000E+00
Pb-212	3.1866E-01	1.1467E-01	1.1721E-01	0.865E-01
PB-214	5.0618E-01	1.3771E-01	1.4243E-01	0.860E-01
RA-226 A	2.8559E-01	1.1804E+00	1.1806E+00	0.974E+00
Th-230 #A	-1.5913E+01	9.6781E+01	9.6819E+01	0.975E+01
Th-234 #A	-9.9919E-01	4.7453E+00	4.7463E+00	0.168E+01
TI-208	2.8253E-01	1.0294E-01	1.0463E-01	0.441E-01
U-235 A	3.7186E-02	6.4622E-02	6.4683E-02	0.640E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.039E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0002-003 349g
 11/09/10 13:30

Acquisition information

Start time: 30-Nov-2010 06:36:49
 Live time: 5400
 Real time: 5408

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228 C	2.2106E-01	1.2442E-01	1.2535E-01	0.151E+00
AM-241 #A	-1.6806E-01	2.3223E-01	2.3223E-01	0.754E-01
Bi-212	4.6450E-01	2.9497E-01	2.9666E-01	0.219E+00
BI-214	6.9034E-01	1.0872E-01	1.1802E-01	0.575E-01
CO-60 A	-8.6614E-03	3.6560E-02	3.6565E-02	0.265E-01
CS-137	1.2751E-01	4.7518E-02	4.8285E-02	0.341E-01
EU-152 A	7.7123E-02	6.9469E-02	6.9776E-02	0.792E-01
EU-154 A	3.5386E-02	4.2199E-02	4.2305E-02	0.686E-01
K-40	1.8960E+01	1.2375E+00	1.8087E+00	0.470E-01
Pa-234	2.8498E-01	1.7560E-01	1.7670E-01	0.145E+00
Pb-210 #C	0.0000E+00	7.4267E+00	7.4267E+00	0.000E+00
Pb-212	3.1904E-01	8.0441E-02	8.4029E-02	0.606E-01
PB-214	5.7236E-01	1.2415E-01	1.3078E-01	0.687E-01
RA-226 A	4.2844E-01	8.6852E-01	8.6912E-01	0.712E+00
Th-230 #A	-5.3803E+00	3.7574E+01	3.7585E+01	0.146E+02
Th-234 #A	-4.3763E-02	1.7542E+00	1.7542E+00	0.122E+01
TI-208	1.3334E-01	4.9057E-02	4.9846E-02	0.340E-01
U-235	5.3721E-02	5.3328E-02	5.3483E-02	0.424E-01

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- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.161E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0002-004 326g
 11/09/10 14:30

Acquisition information
 Start time: 30-Nov-2010 11:37:38
 Live time: 2700
 Real time: 2704

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	3.5676E-01	2.6062E-01	2.6178E-01	0.217E+00
AM-241 #A	-3.1530E-02	6.5220E-01	6.5221E-01	0.387E+00
Bi-212	5.8519E-01	3.6255E-01	3.6474E-01	0.237E+00
BI-214	7.3192E-01	1.9447E-01	2.0047E-01	0.769E-01
CO-60 #A	-4.0315E-03	5.8223E-02	5.8223E-02	0.430E-01
CS-137	2.8085E-01	6.8664E-02	7.1211E-02	0.332E-01
EU-152 A	1.0004E-01	9.1311E-02	9.1704E-02	0.147E+00
EU-154 A	3.3326E-02	5.3672E-02	5.3746E-02	0.106E+00
K-40	1.9407E+01	1.8943E+00	2.3263E+00	0.227E+00
Pa-234 #	2.3417E-01	1.8614E-01	1.8684E-01	0.118E+00
Pb-210 #C	0.0000E+00	2.4548E+00	2.4548E+00	0.000E+00
Pb-212	4.9802E-01	1.3337E-01	1.3866E-01	0.878E-01
PB-214	5.9737E-01	1.4253E-01	1.4885E-01	0.734E-01
RA-226	1.2066E+00	1.3930E+00	1.3960E+00	0.111E+01
Th-230 #A	-1.2910E+01	9.7275E+01	9.7299E+01	0.176E+02
Th-234	2.4689E+00	2.0896E+00	2.1030E+00	0.172E+01
TI-208	2.3814E-01	7.4204E-02	7.5862E-02	0.305E-01
U-235 C	1.2409E-01	1.1251E-01	1.1290E-01	0.754E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.540E+01 pCi /g

Laboratory: New World Technology

ORTEC g v - i (3263) Npp32 G53W3.10 30-NOV-2010 11:36:50
 New World Technology Spectrum name: 3S000194.An1

Sample description
 Parcel D1 06-PD1PI-0002-005 340g
 11/10/10 09:00

Acquisition information
 Start time: 30-Nov-2010 10:05:23
 Live time: 5400
 Real time: 5406

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity	Counting	Total	pCi /g
	pCi /g	pCi /g	pCi /g	
Ac-228	6.7780E-01	2.3346E-01	2.3811E-01	0.102E+00
AM-241 A	3.4692E-02	7.7586E-02	7.7648E-02	0.631E-01
Bi-212	3.4463E-01	3.1694E-01	3.1780E-01	0.243E+00
BI-214	6.6595E-01	1.3072E-01	1.3802E-01	0.569E-01
CO-60 #A	-2.9001E-03	3.8214E-02	3.8215E-02	0.275E-01
CS-137	1.9020E-01	4.9314E-02	5.0944E-02	0.295E-01
EU-152 #A	-3.3022E-01	1.1137E+00	1.1140E+00	0.891E-01
EU-154 C	7.4815E-02	5.4838E-02	5.5203E-02	0.443E-01
K-40	1.2433E+01	1.1859E+00	1.4679E+00	0.614E+00
Pa-234 C	1.7552E-01	1.6082E-01	1.6128E-01	0.145E+00
Pb-210	1.2089E+00	8.5861E-01	8.6380E-01	0.577E+00
Pb-212	3.7236E-01	8.4830E-02	8.9442E-02	0.625E-01
PB-214	6.0552E-01	1.5931E-01	1.6514E-01	0.752E-01
RA-226	8.2207E-01	9.5756E-01	9.5957E-01	0.784E+00
Th-230 #A	2.8780E+00	8.0698E+00	8.0846E+00	0.573E+01
Th-234 #	3.1444E+00	1.4156E+00	1.4474E+00	0.960E+00
TI-208 A	-3.9687E-01	2.3909E-01	2.4053E-01	0.730E-01
U-235 C	1.2576E-01	9.8366E-02	9.8824E-02	0.528E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 1.964E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0003-001 345g
 11/10/10 10:00

Acquisition information

Start time: 30-Nov-2010 09:50:36
 Live time: 5400
 Real time: 5408

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	3.4176E-01	1.5328E-01	1.5509E-01	0.148E+00
AM-241 #A	2.4556E-01	3.6441E-01	3.6507E-01	0.251E+00
Bi-212	3.1324E-01	3.2285E-01	3.2356E-01	0.252E+00
BI-214	7.4878E-01	1.4781E-01	1.5597E-01	0.618E-01
CO-60 #A	-1.8875E-02	2.8067E-02	2.8096E-02	0.238E-01
CS-137	1.3095E-01	4.7565E-02	4.8373E-02	0.339E-01
EU-152 C	8.7054E-02	6.5872E-02	6.6285E-02	0.759E-01
EU-154 A	3.5569E-02	4.6923E-02	4.7020E-02	0.604E-01
K-40	2.0703E+01	1.4381E+00	2.0354E+00	0.287E+00
Pa-234 A	1.0258E-01	1.0185E-01	1.0209E-01	0.200E+00
Pb-210 #C	0.0000E+00	7.5152E+00	7.5152E+00	0.000E+00
Pb-212	3.8470E-01	8.1991E-02	8.7065E-02	0.599E-01
PB-214	5.7137E-01	1.1918E-01	1.2605E-01	0.596E-01
RA-226 A	3.2043E-01	8.5022E-01	8.5057E-01	0.701E+00
Th-230 #A	6.5062E+00	2.2902E+01	2.2928E+01	0.153E+02
Th-234 #A	-9.7475E-02	1.4557E+00	1.4557E+00	0.117E+01
TI-208	2.1210E-01	5.5474E-02	5.7225E-02	0.264E-01
U-235 C	5.2212E-02	7.8201E-02	7.8300E-02	0.481E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.309E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0003-005 325g
 11/11/10 09:00

Acquisition information

Start time: 30-Nov-2010 14:37:43
 Live time: 5400
 Real time: 5408

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	5.6994E-01	1.5372E-01	1.5869E-01	0.168E+00
AM-241 #A	1.0160E-01	3.0952E-01	3.0965E-01	0.238E+00
Bi-212	6.3058E-01	2.8239E-01	2.8563E-01	0.190E+00
BI-214	7.6087E-01	1.1161E-01	1.2254E-01	0.520E-01
CO-60 A	-1.9966E-02	3.1463E-02	3.1492E-02	0.262E-01
CS-137	2.0190E-01	5.4277E-02	5.5948E-02	0.359E-01
EU-152 C	1.9024E-01	1.0195E-01	1.0322E-01	0.949E-01
EU-154 C	8.1610E-02	7.5075E-02	7.5393E-02	0.592E-01
K-40	1.8911E+01	1.3010E+00	1.8503E+00	0.111E+00
Pa-234 #A	3.7126E-02	6.7109E-02	6.7158E-02	0.726E-01
Pb-210 #C	0.0000E+00	3.8428E+00	3.8428E+00	0.000E+00
Pb-212	4.9955E-01	8.9715E-02	9.7445E-02	0.633E-01
PB-214	6.3742E-01	1.3954E-01	1.4686E-01	0.686E-01
RA-226	1.0881E+00	9.2422E-01	9.2787E-01	0.740E+00
Th-230 #A	-8.2610E+00	4.0026E+01	4.0051E+01	0.144E+02
Th-234 #A	4.1355E-01	1.7269E+00	1.7274E+00	0.128E+01
TI-208	2.6862E-01	6.3789E-02	6.6224E-02	0.287E-01
U-235 C	8.1998E-02	7.9826E-02	8.0066E-02	0.504E-01

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- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.357E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0003-006 374g
 11/11/10 09:30

Acquisition information
 Start time: 30-Nov-2010 20:18:39
 Live time: 5400
 Real time: 5408

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	4.1080E-01	1.4099E-01	1.4382E-01	0.146E+00
AM-241 #A	-6.7696E-02	7.1120E-01	7.1122E-01	0.240E+00
Bi-212	4.2562E-01	2.3961E-01	2.4136E-01	0.170E+00
BI-214	7.4171E-01	1.1469E-01	1.2485E-01	0.451E-01
CO-60 #A	0.0000E+00	3.4101E-02	3.4251E-02	0.268E-01
CS-137	1.0851E-01	4.1037E-02	4.1680E-02	0.293E-01
EU-152 C	1.5300E-01	8.5405E-02	8.6384E-02	0.867E-01
EU-154 C	9.2523E-02	6.5105E-02	6.5575E-02	0.635E-01
K-40	1.6249E+01	1.1670E+00	1.6248E+00	0.173E+00
Pa-234 C	1.6072E-01	1.5941E-01	1.5979E-01	0.111E+00
Pb-210 #C	0.0000E+00	7.5343E+00	7.5343E+00	0.000E+00
Pb-212	4.8132E-01	8.0901E-02	8.8814E-02	0.563E-01
PB-214	7.4225E-01	1.3066E-01	1.4112E-01	0.583E-01
RA-226	9.9038E-01	8.2048E-01	8.2388E-01	0.656E+00
Th-230 #A	-1.4094E+01	1.5586E+02	1.5588E+02	0.135E+02
Th-234 A	2.8586E-01	1.5859E+00	1.5861E+00	0.114E+01
TI-208	2.3666E-01	5.7685E-02	5.9777E-02	0.250E-01
U-235 A	2.5165E-02	6.2800E-02	6.2829E-02	0.475E-01

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- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.039E+01 pCi /g

Laboratory: New World Technology

ORTEC g v - i (3263) Npp32 G53W3.10 30-NOV-2010 19:23:50
 New World Technology Spectrum name: 2S000212.An1

Sample description
 Parcel D1 06-PD1PI-0004-001 351g
 11/11/10 10:00

Acquisition information

Start time: 30-Nov-2010 17:47:44
 Live time: 5400
 Real time: 5408

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	4.4705E-01	1.6160E-01	1.6453E-01	0.164E+00
AM-241 #A	-3.0944E-02	3.3392E-01	3.3393E-01	0.198E+00
Bi-212	5.3888E-01	2.3780E-01	2.4062E-01	0.213E+00
BI-214	8.1192E-01	1.3136E-01	1.4203E-01	0.492E-01
CO-60 #A	-5.4293E-02	2.9654E-01	2.9656E-01	0.243E-01
CS-137	1.5850E-01	4.7488E-02	4.8669E-02	0.322E-01
EU-152 A	7.2652E-02	4.4949E-02	4.5369E-02	0.936E-01
EU-154 A	6.2314E-02	6.2299E-02	6.2522E-02	0.666E-01
K-40	1.7466E+01	1.2489E+00	1.7426E+00	0.169E+00
Pa-234	2.8630E-01	2.1275E-01	2.1366E-01	0.119E+00
Pb-210 #C	0.0000E+00	7.9735E+00	7.9735E+00	0.000E+00
Pb-212	5.8557E-01	8.9040E-02	9.9579E-02	0.606E-01
PB-214	6.3374E-01	1.0253E-01	1.1218E-01	0.587E-01
RA-226 A	3.7639E-01	8.7227E-01	8.7273E-01	0.717E+00
Th-230 #A	-2.1522E+00	2.1534E+01	2.1537E+01	0.131E+02
Th-234 A	2.1907E-01	1.3732E+00	1.3734E+00	0.119E+01
TI-208	2.8048E-01	6.3241E-02	6.5913E-02	0.285E-01
U-235 C	8.1958E-02	7.8181E-02	7.8426E-02	0.479E-01

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- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (32.4 to 2596.7 keV) 2.121E+01 pCi /g

Laboratory: New World Technology

Sample description
 Parcel D1 06-PD1PI-0004-002 308g
 11/11/10 14:00

Acquisition information

Start time: 30-Nov-2010 17:47:47
 Live time: 5400
 Real time: 5406

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi /g	Uncertainty Counting pCi /g	2 Sigma Total pCi /g	MDA pCi /g
Ac-228	1.0006E+00	2.8083E-01	2.8921E-01	0.118E+00
AM-241 A	5.9772E-02	9.6555E-02	9.6702E-02	0.781E-01
Bi -212	7.1447E-01	3.5356E-01	3.5689E-01	0.247E+00
BI -214	8.6797E-01	1.2353E-01	1.3635E-01	0.564E-01
CO-60 #A	-2.6984E-02	1.7129E-01	1.7130E-01	0.286E-01
CS-137	1.4550E-01	5.1639E-02	5.2557E-02	0.282E-01
EU-152 A	-1.2154E-01	1.7129E-01	1.7160E-01	0.102E+00
EU-154 C	9.0209E-02	1.1580E-01	1.1605E-01	0.594E-01
K-40	1.4572E+01	1.3614E+00	1.6974E+00	0.689E+00
Pa-234 A	1.5836E-01	2.0160E-01	2.0189E-01	0.180E+00
Pb-210 #	2.6717E+00	1.1369E+00	1.1560E+00	0.673E+00
Pb-212	6.7255E-01	1.0527E-01	1.1706E-01	0.721E-01
PB-214	7.0273E-01	1.2104E-01	1.3115E-01	0.725E-01
RA-226	1.4855E+00	1.0535E+00	1.0594E+00	0.848E+00
Th-230 #A	-5.0282E+00	1.3250E+02	1.3250E+02	0.454E+01
Th-234	3.7855E+00	1.2822E+00	1.3327E+00	0.105E+01
TI -208 #A	-3.0096E-01	1.6008E-01	1.6132E-01	0.802E-01
U-235 C	8.5979E-02	1.0228E-01	1.0249E-01	0.609E-01

- # - All peaks for activity calculation had bad shape.
- * - Activity omitted from total
- & - Activity omitted from total and all peaks had bad shape.
- < - MDA value printed.
- A - Activity printed, but activity < MDA.
- B - Activity < MDA and failed test.
- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half life limit exceeded

----- S U M M A R Y -----
 Total Activity (43.6 to 2779.2 keV) 2.662E+01 pCi /g

Laboratory: New World Technology

TetraTech Hunter's Point Lab

Sample ID: 06-PD1-MH749-001
 Sample Description: MH749 sediment sample

 Detector: HPGe #11 51-TP32744A Spectrum ID: 11_20120124_010
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: PD1-MH Matrix: S
 Sample Time: 1/19/2012 14:00 Live Time: 5400 sec
 Acquisition Time: 1/24/2012 14:39:31 Real Time: 5405 sec
 Analysis Time: 1/24/2012 16:09 Dead Time: 0.09 %
 Analysis Quantity: 3.490E+02 g

Efficiency: HPGe #11 Tuna Can Soil Solid 85625-918
 Efficiency Cal Date: 1/5/2012 11:14
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228		2.826E-01	28.47	8.044E-02	8.266E-02	4.624E-02
Am-241	#AB	1.911E-04	66350.00	1.268E-01	1.268E-01	1.044E-01
Bi-212		5.163E-01	29.72	1.535E-01	1.574E-01	5.216E-02
Bi-214		3.271E-01	15.42	5.044E-02	5.496E-02	1.352E-02
Co-60	#AB	-6.436E-03	331.70	2.135E-02	2.135E-02	1.707E-02
Cs-137	#AB	9.394E-03	186.80	1.755E-02	1.756E-02	1.373E-02
Eu-152	#AB	1.049E-03	4133.00	4.335E-02	4.335E-02	3.564E-02
Eu-154	#AB	-9.307E-03	618.80	5.759E-02	5.759E-02	4.661E-02
K-40		1.015E+01	6.85	6.954E-01	9.899E-01	1.463E-01
Pa-234	#AB	3.791E-02	243.50	9.231E-02	9.234E-02	7.219E-02
Pb-210	#AB	0.000E+00	2000.00	2.589E+00	2.589E+00	4.153E+00
Pb-212		3.828E-01	12.34	4.721E-02	5.534E-02	1.930E-02
Pb-214		3.354E-01	19.24	6.451E-02	6.847E-02	2.679E-02
Ra-226		2.749E-01	119.80	3.292E-01	3.299E-01	2.660E-01
Th-230	#AB	-5.313E+00	150.20	7.980E+00	7.993E+00	6.345E+00
Th-234	#	4.515E-01	75.33	3.401E-01	3.425E-01	2.640E-01
Tl-208		1.275E-01	21.10	2.689E-02	2.820E-02	9.409E-03
U-235	AB	1.450E-02	165.40	2.398E-02	2.400E-02	1.915E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 1.291E+01

Analyst: Andrew Alexander

Reviewer: Philip Smith
 Review Date: 1/26/2012 09:18

TetraTech Hunter's Point Lab

Sample ID: 06-PD1-MH745-001-01
 Sample Description: Pipe Sediment, Gun Mole Pier, MH745

Detector: HPGe #6 49-TN19510U Spectrum ID: 6_20110318_016
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: MH745 Matrix: S
 Sample Time: 3/8/11 12:45 Live Time: 2700 sec
 Acquisition Time: 3/18/11 22:54:02 Real Time: 2702 sec
 Analysis Time: 3/18/11 23:39 Dead Time: 0.06 %
 Analysis Quantity: 3.230E+02 g

Efficiency: HPGe #6 Tuna Can Soil Solid 83491-918
 Efficiency Cal Date: 3/8/11 12:39
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228	#	2.714E-01	66.02	1.792E-01	1.802E-01	1.236E-01
Am-241	#AB	0.000E+00	2000.00	4.448E-02	4.448E-02	9.148E-02
Bi-212	#AB	2.097E-01	142.20	2.982E-01	2.986E-01	2.233E-01
Bi-214		5.331E-01	19.71	1.050E-01	1.109E-01	2.199E-02
Co-60	#AB	-2.171E-02	258.40	5.608E-02	5.610E-02	4.420E-02
Cs-137	#	4.419E-02	96.91	4.283E-02	4.293E-02	3.094E-02
Eu-152	#AB	2.952E-02	329.90	9.738E-02	9.740E-02	7.791E-02
Eu-154	#AB	4.040E-04	28340.00	1.145E-01	1.145E-01	9.427E-02
K-40		1.483E+01	10.01	1.484E+00	1.812E+00	1.967E-01
Pa-234	#AB	-2.260E-02	1027.00	2.320E-01	2.320E-01	1.884E-01
Pb-210		1.945E+00	72.46	1.410E+00	1.417E+00	8.476E-01
Pb-212		2.526E-01	35.15	8.876E-02	9.084E-02	6.614E-02
Pb-214		3.636E-01	33.77	1.228E-01	1.256E-01	5.976E-02
Ra-226		1.098E+00	73.25	8.042E-01	8.085E-01	6.084E-01
Th-230	#AB	1.703E+00	435.20	7.413E+00	7.418E+00	6.025E+00
Th-234	#	8.126E-01	86.09	6.995E-01	7.038E-01	5.065E-01
Tl-208		2.074E-01	28.77	5.966E-02	6.123E-02	2.883E-02
U-235	AB	0.000E+00	0.00	4.517E-01	4.517E-01	5.431E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 2.230E+01

Analyst: Philip Smith

Reviewer: Philip Smith
 Review Date: 3/21/11 11:33

TetraTech Hunter's Point Lab

Sample ID: 06-PD1-MH780-001-01
 Sample Description: Manhole

 Detector: HPGe #4 50-TP42236A Spectrum ID: 4_20110307_010
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: MH780-001 Matrix: S
 Sample Time: 2/25/11 10:05 Live Time: 2700 sec
 Acquisition Time: 3/7/11 20:30:11 Real Time: 2702 sec
 Analysis Time: 3/7/11 21:15 Dead Time: 0.08 %
 Analysis Quantity: 3.510E+02 g

Efficiency: HPGe #4 Tuna Can Soil Solid 83490-918
 Efficiency Cal Date: 1/19/11 20:43
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228	#	1.915E-01	56.24	1.077E-01	1.085E-01	6.996E-02
Am-241	#AB	5.242E-02	290.80	1.524E-01	1.525E-01	1.224E-01
Bi-212	#AB	7.079E-02	300.80	2.129E-01	2.130E-01	1.688E-01
Bi-214		2.712E-01	24.77	6.719E-02	6.959E-02	2.371E-02
Co-60	#AB	3.818E-03	353.20	1.349E-02	1.349E-02	2.888E-02
Cs-137	#	4.226E-02	74.48	3.148E-02	3.161E-02	2.225E-02
Eu-152	#AB	-5.952E-03	913.70	5.438E-02	5.438E-02	4.424E-02
Eu-154	#AB	-9.472E-03	1064.00	1.008E-01	1.008E-01	8.207E-02
K-40	#	1.713E+01	7.72	1.322E+00	1.786E+00	3.313E-01
Pa-234	#AB	0.000E+00	2000.00	2.163E-02	2.163E-02	2.502E-01
Pb-210	#AB	1.374E+00	282.00	3.875E+00	3.877E+00	3.087E+00
Pb-212		3.562E-01	18.41	6.557E-02	7.100E-02	2.976E-02
Pb-214		2.548E-01	25.64	6.534E-02	6.787E-02	3.926E-02
Ra-226		4.152E-01	100.10	4.156E-01	4.168E-01	3.231E-01
Th-230	#AB	-3.474E+00	303.90	1.056E+01	1.057E+01	8.510E+00
Th-234	#AB	-2.953E-02	1402.00	4.141E-01	4.141E-01	3.396E-01
Tl-208		1.196E-01	28.96	3.462E-02	3.552E-02	1.243E-02
U-235	#AB	-3.675E-02	335.90	1.234E-01	1.235E-01	3.070E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 2.028E+01

Analyst: Chanthachone Alexander

Reviewer: Philip Smith
 Review Date: 3/8/11 08:41

TetraTech Hunter's Point Lab

Sample ID: 06-PD1-MH775-001-01
 Sample Description: Pipe Sediment, Gun Mole Pier, MH775

Detector: HPGe #5 50-TP42234A Spectrum ID: 5_20110318_015
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: MH775 Matrix: S
 Sample Time: 3/8/11 11:00 Live Time: 2700 sec
 Acquisition Time: 3/18/11 22:50:47 Real Time: 2703 sec
 Analysis Time: 3/18/11 23:36 Dead Time: 0.11 %
 Analysis Quantity: 3.510E+02 g

Efficiency: HPGe #5 Tuna Can Soil Solid 83491-918
 Efficiency Cal Date: 1/18/11 12:55
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228		3.111E-01	37.15	1.156E-01	1.176E-01	6.444E-02
Am-241	#AB	8.960E-03	1367.00	1.225E-01	1.225E-01	1.003E-01
Bi-212	#AB	1.053E-01	173.50	1.828E-01	1.829E-01	1.385E-01
Bi-214		2.552E-01	30.34	7.744E-02	7.929E-02	3.428E-02
Co-60	#AB	-1.061E-02	322.20	3.418E-02	3.419E-02	2.711E-02
Cs-137	#AB	1.912E-02	142.00	2.715E-02	2.718E-02	2.044E-02
Eu-152	#AB	-3.052E-03	1481.00	4.520E-02	4.520E-02	3.689E-02
Eu-154	#AB	-1.242E-02	788.00	9.783E-02	9.783E-02	7.932E-02
K-40		1.183E+01	8.62	1.019E+00	1.314E+00	5.115E-02
Pa-234	#AB	-3.739E-02	461.40	1.725E-01	1.725E-01	1.381E-01
Pb-210	#AB	7.018E-03	36540.00	2.565E+00	2.565E+00	2.112E+00
Pb-212		3.151E-01	19.60	6.177E-02	6.630E-02	3.670E-02
Pb-214		3.250E-01	21.04	6.838E-02	7.228E-02	2.719E-02
Ra-226	#	5.665E-01	78.92	4.471E-01	4.492E-01	3.407E-01
Th-230	#AB	-1.780E+00	483.90	8.612E+00	8.618E+00	6.987E+00
Th-234	#	3.563E-01	109.70	3.908E-01	3.923E-01	3.016E-01
Tl-208		1.412E-01	25.06	3.538E-02	3.660E-02	1.025E-02
U-235	AB	-2.509E-02	308.90	7.751E-02	7.753E-02	3.085E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 1.424E+01

Analyst: Philip Smith

Reviewer: Philip Smith
 Review Date: 3/21/11 11:32

TetraTech Hunter's Point Lab

Sample ID: 06-PD1MH766-001-01
 Sample Description: 06-D29-00-3A; GMP

 Detector: HPGe #2 50-TP42229A Spectrum ID: 2_20110325_003
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: MH766 Matrix: S
 Sample Time: 3/17/2011 14:55 Live Time: 2700 sec
 Acquisition Time: 3/25/2011 08:32:48 Real Time: 2703 sec
 Analysis Time: 3/25/2011 09:18 Dead Time: 0.10 %
 Analysis Quantity: 3.200E+02 g

Efficiency: HPGe #2 Tuna Can Soil Solid 83489-918
 Efficiency Cal Date: 1/19/2011 21:26
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228		1.617E-01	71.28	1.153E-01	1.158E-01	7.702E-02
Am-241	#AB	-3.298E-03	8129.00	2.681E-01	2.681E-01	2.206E-01
Bi-212	#	2.035E-01	108.00	2.199E-01	2.203E-01	1.570E-01
Bi-214	#	1.998E-01	36.92	7.375E-02	7.494E-02	4.741E-02
Co-60	#AB	1.754E-03	1712.00	3.002E-02	3.002E-02	2.450E-02
Cs-137	#	5.500E-02	62.79	3.453E-02	3.473E-02	2.284E-02
Eu-152	#AB	4.535E-04	14960.00	6.783E-02	6.783E-02	5.583E-02
Eu-154	#AB	-1.930E-02	4000.00	7.718E-01	7.718E-01	1.118E-01
K-40		1.016E+01	10.45	1.063E+00	1.279E+00	1.858E-01
Pa-234	#AB	-1.874E-03	9084.00	1.703E-01	1.703E-01	1.400E-01
Pb-210	#	0.000E+00	801.20	2.096E+00	2.096E+00	0.000E+00
Pb-212		3.506E-01	25.35	8.888E-02	9.283E-02	3.894E-02
Pb-214	#	2.575E-01	27.85	7.171E-02	7.407E-02	3.859E-02
Ra-226	#AB	4.175E-01	132.30	5.525E-01	5.534E-01	4.275E-01
Th-230	#AB	-3.761E+00	404.90	1.523E+01	1.524E+01	1.230E+01
Th-234	#AB	1.549E-02	2763.00	4.280E-01	4.280E-01	3.515E-01
Tl-208		1.392E-01	26.61	3.703E-02	3.817E-02	1.456E-02
U-235	#	3.107E-02	115.80	3.600E-02	3.607E-02	2.754E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 1.200E+01

Analyst: Philip Smith

Reviewer: Philip Smith
 Review Date: 3/28/2011 12:32

TetraTech Hunter's Point Lab

Sample ID: 06-PD1MH768-001-01
 Sample Description: 06-D29-00-5A; GMP

Detector: HPGe #3 51-TP32733A	Spectrum ID: 3_20110325_003
Contract: Shaw	Sample Type: SAMPLE
Unit Number: MH768	Matrix: S
Sample Time: 3/17/2011 11:20	Live Time: 2700 sec
Acquisition Time: 3/25/2011 08:34:02	Real Time: 2705 sec
Analysis Time: 3/25/2011 09:19	Dead Time: 0.17 %
Analysis Quantity: 3.620E+02 g	

Efficiency: HPGe #3 Tuna Can Soil Solid 83490-918
 Efficiency Cal Date: 1/21/2011 13:54
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228	#	2.672E-01	40.41	1.080E-01	1.096E-01	6.152E-02
Am-241	#AB	-1.205E-03	9042.00	1.089E-01	1.089E-01	8.964E-02
Bi-212	#AB	9.825E-02	198.80	1.953E-01	1.954E-01	1.507E-01
Bi-214		3.808E-01	18.28	6.960E-02	7.410E-02	1.352E-02
Co-60	#AB	-1.579E-04	19770.00	3.121E-02	3.121E-02	2.570E-02
Cs-137	#AB	5.360E-03	466.20	2.498E-02	2.499E-02	2.003E-02
Eu-152	#AB	5.384E-05	101600.00	5.467E-02	5.467E-02	4.503E-02
Eu-154	#AB	-3.879E-04	22860.00	8.865E-02	8.865E-02	7.298E-02
K-40		1.199E+01	9.48	1.137E+00	1.413E+00	2.463E-01
Pa-234	#AB	-3.353E-02	485.40	1.628E-01	1.628E-01	1.304E-01
Pb-210	#AB	-1.246E+00	315.30	3.929E+00	3.930E+00	3.150E+00
Pb-212		3.813E-01	17.26	6.581E-02	7.197E-02	2.722E-02
Pb-214		3.384E-01	20.10	6.802E-02	7.227E-02	2.638E-02
Ra-226	#	6.781E-01	71.06	4.819E-01	4.846E-01	3.568E-01
Th-230	#AB	-6.473E+00	166.10	1.075E+01	1.081E+01	8.535E+00
Th-234	#AB	2.959E-02	1503.00	4.449E-01	4.449E-01	3.651E-01
Tl-208		1.223E-01	27.61	3.377E-02	3.473E-02	1.480E-02
U-235		2.908E-02	108.40	3.152E-02	3.160E-02	2.529E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 1.432E+01

Analyst: Philip Smith

Reviewer: Philip Smith
 Review Date: 3/28/2011 12:32

TetraTech Hunter's Point Lab

Sample ID: 06-PD1MH769-001-01
 Sample Description: 06-D29-00-5A; GMP

 Detector: HPGe #4 50-TP42236A Spectrum ID: 4_20110325_003
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: MH769 Matrix: S
 Sample Time: 3/17/2011 10:15 Live Time: 2700 sec
 Acquisition Time: 3/25/2011 08:35:17 Real Time: 2701 sec
 Analysis Time: 3/25/2011 09:20 Dead Time: 0.05 %
 Analysis Quantity: 3.340E+02 g

Efficiency: HPGe #4 Tuna Can Soil Solid 83490-918
 Efficiency Cal Date: 1/19/2011 20:43
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228		2.674E-01	42.40	1.134E-01	1.149E-01	6.599E-02
Am-241	#AB	-7.051E-02	223.80	1.578E-01	1.579E-01	1.256E-01
Bi-212	#AB	1.274E-01	157.30	2.003E-01	2.005E-01	1.514E-01
Bi-214	#	1.456E-01	46.65	6.792E-02	6.862E-02	4.692E-02
Co-60	#AB	-1.138E-02	356.70	4.060E-02	4.060E-02	3.244E-02
Cs-137	#	2.131E-02	103.80	2.213E-02	2.218E-02	1.544E-02
Eu-152	#AB	1.903E-03	2915.00	5.549E-02	5.549E-02	4.552E-02
Eu-154	#AB	0.000E+00	2000.00	3.667E-02	3.667E-02	3.021E-02
K-40		1.177E+01	9.55	1.124E+00	1.394E+00	2.280E-01
Pa-234	#AB	0.000E+00	2000.00	3.214E-02	3.214E-02	2.135E-01
Pb-210	#AB	2.519E+00	163.90	4.128E+00	4.135E+00	3.210E+00
Pb-212		3.537E-01	18.54	6.558E-02	7.093E-02	2.771E-02
Pb-214		2.462E-01	27.33	6.729E-02	6.959E-02	4.010E-02
Ra-226	AB	2.330E-01	196.90	4.588E-01	4.591E-01	3.627E-01
Th-230	#AB	2.010E+00	418.30	8.408E+00	8.415E+00	6.785E+00
Th-234	#AB	2.577E-01	145.40	3.746E-01	3.754E-01	2.926E-01
Tl-208	#	9.351E-02	34.48	3.224E-02	3.283E-02	1.831E-02
U-235		2.800E-02	99.30	2.780E-02	2.788E-02	2.083E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 1.808E+01

Analyst: Philip Smith

Reviewer: Philip Smith
 Review Date: 3/28/2011 12:33

TetraTech Hunter's Point Lab

Sample ID: 06-PD1-MH787-001
 Sample Description: 06-D25-00-2C

 Detector: HPGe #11 51-TP32744A Spectrum ID: 11_20111114_006
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: MH787 Matrix: S
 Sample Time: 11/2/2011 11:30 Live Time: 5400 sec
 Acquisition Time: 11/14/2011 10:05:39 Real Time: 5407 sec
 Analysis Time: 11/14/2011 11:35 Dead Time: 0.14 %
 Analysis Quantity: 3.120E+02 g

Efficiency: HPGe #11 Tuna Can Soil Solid 83491-918
 Efficiency Cal Date: 1/28/2011 17:38
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228	#	2.383E-01	34.59	8.242E-02	8.407E-02	4.964E-02
Am-241	#AB	-5.029E-02	286.90	1.443E-01	1.443E-01	1.167E-01
Bi-212	#AB	1.010E-01	143.70	1.451E-01	1.452E-01	1.113E-01
Bi-214		3.789E-01	16.19	6.135E-02	6.636E-02	2.096E-02
Co-60	#AB	-3.972E-04	5781.00	2.296E-02	2.296E-02	1.888E-02
Cs-137		4.798E-01	10.37	4.973E-02	5.935E-02	1.271E-02
Eu-152	#AB	2.503E-02	187.00	4.679E-02	4.683E-02	3.694E-02
Eu-154	#AB	3.752E-02	167.70	6.292E-02	6.297E-02	4.831E-02
K-40		1.748E+01	5.65	9.869E-01	1.573E+00	1.145E-01
Pa-234	#AB	0.000E+00	2000.00	6.396E-02	6.396E-02	1.497E-01
Pb-210	#AB	0.000E+00	2000.00	5.014E+00	5.014E+00	4.462E+00
Pb-212		3.925E-01	13.52	5.306E-02	6.095E-02	2.297E-02
Pb-214		4.154E-01	19.78	8.215E-02	8.744E-02	3.449E-02
Ra-226		3.227E-01	122.70	3.959E-01	3.967E-01	3.126E-01
Th-230	#AB	-4.158E+00	217.70	9.051E+00	9.079E+00	7.292E+00
Th-234	#	7.988E-01	49.15	3.926E-01	3.999E-01	2.333E-01
Tl-208		1.088E-01	24.56	2.673E-02	2.769E-02	1.564E-02
U-235		4.669E-02	52.55	2.453E-02	2.479E-02	1.803E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 2.083E+01

Analyst: Chris Fluty

Reviewer: Philip Smith
 Review Date: 11/15/2011 12:54

TetraTech Hunter's Point Lab

Sample ID: 06-PD1-MH785-001
 Sample Description: 06-D25-00-3A

 Detector: HPGe #9 51-TP42227A Spectrum ID: 9_20111114_005
 Contract: Shaw Sample Type: SAMPLE
 Unit Number: MH785 Matrix: S
 Sample Time: 11/2/2011 13:30 Live Time: 2700 sec
 Acquisition Time: 11/14/2011 09:10:59 Real Time: 2704 sec
 Analysis Time: 11/14/2011 09:56 Dead Time: 0.17 %
 Analysis Quantity: 3.140E+02 g

Efficiency: HPGe #9 Tuna Can Soil Solid 83490-918
 Efficiency Cal Date: 2/8/2011 08:53
 Library: GenericAnalysis.lib
 Analysis Engine: Env32 G53W4.26

Nuclide	Flags	Activity pCi/g	2-Sigma Counting Uncert %	2-Sigma Counting Uncert pCi/g	2-Sigma Total Uncert pCi/g	Minimum Detectable Activity pCi/g
Ac-228	#	1.829E-01	68.55	1.254E-01	1.260E-01	8.605E-02
Am-241	#AB	6.745E-03	1965.00	1.326E-01	1.326E-01	1.087E-01
Bi-212	#AB	1.325E-01	175.90	2.331E-01	2.333E-01	1.788E-01
Bi-214		1.951E-01	36.48	7.115E-02	7.233E-02	4.426E-02
Co-60	#AB	4.178E-03	376.20	1.572E-02	1.572E-02	3.114E-02
Cs-137	#	2.693E-02	109.50	2.949E-02	2.955E-02	2.146E-02
Eu-152	#AB	-6.260E-03	948.60	5.939E-02	5.939E-02	4.831E-02
Eu-154	#AB	3.494E-02	298.70	1.044E-01	1.044E-01	8.202E-02
K-40		2.026E+01	7.55	1.530E+00	2.087E+00	2.919E-01
Pa-234	#AB	6.979E-02	238.80	1.667E-01	1.668E-01	1.285E-01
Pb-210	#AB	-1.250E+00	387.50	4.844E+00	4.845E+00	3.900E+00
Pb-212		2.640E-01	23.26	6.141E-02	6.464E-02	3.691E-02
Pb-214		3.349E-01	25.05	8.391E-02	8.731E-02	3.617E-02
Ra-226	#	4.379E-01	106.40	4.659E-01	4.671E-01	3.527E-01
Th-230	#AB	8.003E+00	143.40	1.147E+01	1.155E+01	8.992E+00
Th-234		6.933E-01	67.56	4.684E-01	4.730E-01	2.704E-01
Tl-208	#	8.379E-02	40.34	3.380E-02	3.426E-02	2.031E-02
U-235	#	2.842E-02	112.80	3.207E-02	3.214E-02	2.447E-02

- All peaks for activity calculation had bad shape.
 A - Activity < MDA
 B - Activity < Critical Level

Total Activity 3.076E+01

Analyst: Chris Fluty

Reviewer: Philip Smith
 Review Date: 11/15/2011 12:53

Appendix N
Radiological Unrestricted Release Recommendations for
Parcel D-1 (Phase 1)



Matthew Rodriguez
Secretary for
Environmental Protection



Department of Toxic Substances Control

Deborah O. Raphael, Director
700 Heinz Avenue
Berkeley, California 94710-2721



Edmund G. Brown Jr.
Governor

August 30, 2013

Mr. Keith Forman
Department of the Navy
1455 Frazee Road Suite 900
San Diego, CA 92108-4310

RADIOLOGICAL UNRESTRICTED RELEASE FOR THE FORMER BUILDING 313, 313A, AND 322 SITES, PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

Dear Mr. Forman:

Thank you for the opportunity to review the Final Final Status Survey Report for the Former Building 313, 313A, and 322 Sites at Hunters Point Naval Shipyard, San Francisco, California dated March 2013 (Final Report). Comments to a Draft Final Status Survey Report were provided by the Department of Toxic Substances Control (DTSC) on January 8, 2013 and the California Department of Public Health – Environmental Health Branch (CDPH-EMB) on January 17, 2013. The Final Report has been adequately revised to incorporate and address all comments.

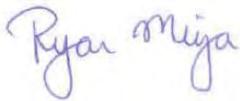
The former Building 313, 313A, and 322 Sites are located in Parcel D-1 northwest of Building 274 along Morrell Street. The buildings were demolished at some unknown time in the past prior to August 2004, and only compacted soil, asphalt, and underground sewer laterals remain. The 2004 Historical Radiological Assessment states that the buildings were once used by the Naval Radiological Defense Laboratory Instrumentation Laboratory as a stockroom and storage areas. The radionuclides of concern (ROCs) for the Former Building 313, 313A, and 322 Sites include cesium-137 (¹³⁷Cs), radium-226 (²²⁶Ra), plutonium-239 (²³⁹Pu), thorium-232 (²³²Th), and strontium-90 (⁹⁰Sr). The planned future use of the area is as a maritime industrial area.

Thank you for coordinating with and transferring soil samples to CDPH-EMB in order to conduct their own independent laboratory analysis. Enclosed please find CDPH-EMB's memorandum recommending radiological unrestricted release for the Building 313, 313A, and 322 Sites. DTSC concurs with CDPH-EMB's memorandum supporting release for unrestricted use, with respect to radiological issues, at the former Building 313, 313A, and 322 Sites.

Mr. Keith Forman
August 30, 2013
Page 2

If you have any questions, please contact me at 510-540-3775 or by e-mail at Ryan.Miya@dtsc.ca.gov.

Sincerely,

 Digitally signed by Ryan Miya
DN: cn=Ryan Miya, o=DTSC, ou,
email=Ryan.Miya@dtsc.ca.gov, c=US
Date: 2013.08.30 16:06:11 -07'00'

Ryan Miya, Ph.D.
Senior Hazardous Substances Scientist
Brownfields and Environmental Restoration
Program - Berkeley

Enclosure

E-mail distribution with enclosure:

Mr. Craig Cooper, U.S. Environmental Protection Agency Region IX
Mr. Ross Steenson, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Tina Low, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Amy Brownell, City of San Francisco
Mr. Pat Brooks, Department of the Navy
Mr. Christopher Yantos, Department of the Navy
Ms. Tracy Jue, California Department of Public Health
Mr. Ron Pilorin, California Department of Public Health
Ms. Leslie Lundgren, CH2M HILL
Mr. Leon Muhammad, Community resident
Dr. Ray Tompkins, Community resident
Ms. Diane Wesley Smith, Community resident
Ms. Marie Harrison, Greenaction
Mr. Alex Lantsberg, IBNA Boardmember



California Department of Public Health
MEMORANDUM

DATE: August 28, 2013

TO: Stephen Woods, Department of Defense Project Manager
Center for Environmental Health
1500 Capitol Avenue, MS 0511

VIA: David Mazzera, Ph.D, Acting Chief *David M. Mazzera 8/29/13*
Division Drinking Water and Environmental Management
1616 Capitol Avenue, MS 7400

FROM: Kelvin Yamada, Chief *KY 8/28/13*
Environmental Management Branch
1616 Capitol Avenue, MS 7402

Subject: Radiological Unrestricted Release Recommendation for Building Sites 313,313A and 322

Through the California Department of Toxic Substances Control (DTSC), the US Department of Navy (DON) seeks a radiological unrestricted release recommendation (RURR) from the Environmental Management Branch (EMB), California Department of Public Health (CDPH) for Building Sites 313, 313A and 322 within the former Hunters Point Shipyard. The DON request for an RURR is based upon the *Final Status Survey Report Former Building Sites 313,313A and 322*. EMB has completed its review of the submitted DON documentation associated with identification of the radionuclide of concern, its location of use and investigative surveys prior to final laboratory closure.

This RURR is restricted to the Specific Survey Units the DON performed surveys on at the Building Sites 313,313A and 322. The specific survey units are:

1. D24-SU1 Class 1 Building Sites 313 and 313A (488 m²)
2. D24-SU2 Class 1 Building Sites 322 (92 m²)
3. D24-SU3 Class 1 15 feet area around the three building footprints (737 m²)
4. D24-SU4 Class 1 area extending out as a 15 feet buffer zone around original survey units (796 m²)

Building Sites 313, 313A and 322 are located northwest of Building 274, within Parcel D-1. The three buildings were demolished in August 2004. After the demolition, only the compacted soil, asphalt, and underground sewer laterals were left in place.

The DON conducted surface gamma walk over surveys and collected soil, asphalt, concrete and swipe samples analyzed by gamma spectroscopy. The samples from soil and asphalt showed no results exceeding the release criteria.

The DON investigated all buildings prior to demolition. Building 313 was a wooden building (3600 ft²) used for instrumentation laboratory and storage areas. The DON surveyed and investigated the building. ¹³⁷Cs (Cs-137) was found above action levels. The DON remediated the soil and resurvey the building. Building 313A, a small building (740 ft²) used for nuclear instrumentation and had an elevated ¹³⁷Cs soil inside the manhole. The soil in the man-hole was remediated and removed. Building 322 is an (860 ft²) was used for nuclear radiological defense laboratory uses. This site also had impacted ¹³⁷Cs soil which was remediated and removed.

The Navy collected soil samples and solid samples for all the Class 1 SU's and conducted 100 percent scan survey on all survey units. All the soil samples were collected by the DON with one duplicate soil sample provided to CDPH for confirmatory testing. It should be noted that the ¹³⁷CS and ²²⁶Ra (186 keV peak) values recorded by the CDPH are above the background level. The 186 keV value for ²²⁶Ra is at or above background due to interference from the ²³⁵U with the similar energy as ²²⁶Ra. CDPH decided to quantify both ²²⁶Ra soil and let the samples develop equilibrium within 40 days to account for in growth from short lived Alpha energies from ²²⁶Ra daughters.

Based on the review of all relevant submitted documents by DON, and the subsequent confirmatory soil analysis by EMB, EMB recommends radiological unrestricted release for Building Sites 313,313A and 322. EMB reviewed all relevant radiological documents based on current guidance. This review meets requirements under California Code of Regulations Title17, Section 30256.

If you need further assistance, please contact Kelvin Yamada at 916-449-5661 or via email Kelvin.Yamada@cdph.ca.gov.



Matthew Rodriguez
Secretary for
Environmental Protection



Department of Toxic Substances Control

Deborah O. Raphael, Director
700 Heinz Avenue
Berkeley, California 94710-2721



Edmund G. Brown Jr.
Governor

August 30, 2013

Mr. Keith Forman
Department of the Navy
1455 Frazee Road Suite 900
San Diego, CA 92108-4310

RADIOLOGICAL UNRESTRICTED RELEASE FOR THE FORMER BUILDING 383
SITE, PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO,
CALIFORNIA

Dear Mr. Forman:

Thank you for the opportunity to review the Final Final Status Survey Report for the Former Building 383 Site at Hunters Point Naval Shipyard, San Francisco, California dated March 2013 (Final Report). Comments to a Draft Final Status Survey Report were provided by the Department of Toxic Substances Control (DTSC) on January 11, 2013 and the California Department of Public Health – Environmental Health Branch (CDPH-EMB) on January 17, 2013. The Final Report has been adequately revised to incorporate and address all comments.

Building 383 was a two-story, steel and concrete, flat-roofed structure measuring approximately 110 feet by 60 feet. The building was located between berths 16 and 20 on Gun Mole Pier in Parcel D-1, at Hunters Point Naval Shipyard. Building 383 was built in 1985 and demolished in early 2011. The Building 383 footprint and surrounding buffer zone is being evaluated in this report for unrestricted release. Building 383 was constructed over the former location of a small building where radioluminescent deck markers from ships were stored and managed. The Building 383 Area was designated as a radiologically impacted site because of the use of the area before construction of the building. The planned future reuse of the property is as shoreline open space. The radionuclides of concern for the Building 383 Area are cesium-137 (^{137}Cs), plutonium-239 (^{239}Pu), strontium-90 (^{90}Sr), and radium-226 (^{226}Ra).

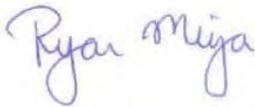
Thank you for coordinating with and transferring soil samples to CDPH-EMB in order to conduct their own independent laboratory analysis. Enclosed please find CDPH-EMB's memorandum recommending radiological unrestricted release for the Building 383 Site.

Mr. Keith Forman
August 30, 2013
Page 2

DTSC concurs with CDPH-EMB's memorandum supporting release for unrestricted use, with respect to radiological issues, at the former Building 383 Site.

If you have any questions, please contact me at 510-540-3775 or by e-mail at Ryan.Miya@dtsc.ca.gov.

Sincerely,



Digitally signed by Ryan Miya
DN: cn=Ryan Miya, o=DTSC, ou,
email=Ryan.Miya@dtsc.ca.gov, c=US
Date: 2013.08.30 16:00:03 -07'00'

Ryan Miya, Ph.D.
Senior Hazardous Substances Scientist
Brownfields and Environmental Restoration
Program - Berkeley

Enclosure

E-mail distribution with enclosure:

Mr. Craig Cooper, U.S. Environmental Protection Agency Region IX
Mr. Ross Steenson, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Tina Low, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Amy Brownell, City of San Francisco
Mr. Pat Brooks, Department of the Navy
Mr. Christopher Yantos, Department of the Navy
Ms. Tracy Jue, California Department of Public Health
Mr. Ron Pilorin, California Department of Public Health
Ms. Leslie Lundgren, CH2M HILL
Mr. Leon Muhammad, Community resident
Dr. Ray Tompkins, Community resident
Ms. Diane Wesley Smith, Community resident
Ms. Marie Harrison, Greenaction
Mr. Alex Lantsberg, IBNA Boardmember



California Department of Public Health
MEMORANDUM

DATE: August 28, 2013

TO: Stephen Woods, Department of Defense Project Manager
Center for Environmental Health
1500 Capitol Avenue, MS 0511 *SW 8-23-13*

VIA: David Mazzera, Ph.D, Acting Chief
Division Drinking Water and Environmental Management
1616 Capitol Avenue, MS 7400 *David Mazzera 8/23/13*

FROM: Kelvin Yamada, Chief
Environmental Management Branch
1616 Capitol Avenue, MS 7402 *KY 8/28/13*

Subject: Radiological Unrestricted Release Recommendation for Building Site 383

Through the California Department of Toxic Substances Control (DTSC), the US Department of Navy (DON) seeks a radiological unrestricted release recommendation (RURR) from the Environmental Management Branch (EMB), California Department of Public Health (CDPH) for Building Site 383 within the former Hunters Point Shipyard. The DON request for an RURR is based upon the *Final Status Survey Report Former Building Site 383*. EMB has completed its review of the submitted DON documentation associated with identification of the radionuclide of concern, its location of use and investigative surveys prior to final laboratory closure.

This RURR is restricted to the specific Survey units the DON performed surveys on at the Building 383 site. The specific survey units are 1 Class 1 Survey Unit and 1 Class 2 Survey Unit. The specific survey units are

1. Survey Unit 1 (605 m²) Class 1
2. Survey Unit 2 (537 m²) 15 ft. buffer zone around Class 1

The Historical Radiological Assessment (HRA) states that the Building Site 383 was used previously to store radioluminescent deck markers from ships in a building located on the Gun Mole Pier. The Building was demolished in 2011, leaving a building footprint.

The Department of the Navy (DON) determined that the isotopes of concern in the Building site 383 Site are Americium-241 (²⁴¹Am), Cesium-137 (¹³⁷Cs), Plutonium-239 (²³⁹Pu), Radium-226 (²²⁶Ra), and strontium-90 (⁹⁰Sr) and tritium ³H. The soil in the area previously belonging to Building Sites 383 has been surveyed for fixed

static gross alpha and gross beta emissions, and static/scan measurements for gamma radiation. All measurements used the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) as a guide

All the soil samples collected by the DON, one duplicate soil sample were given to the CDPH for confirmatory testing. The results of the soil sample are given in the table below (all units in pCi/g). It should be noted that the ^{137}CS and ^{226}Ra (186 keV peak) values recorded by the CDPH are above the background level. The 186 keV value for ^{226}Ra is at or above background is due to interference from the ^{235}U with the similar energy as ^{226}Ra . California Department of Public Health (CDPH) decided to quantify both ^{226}Ra soil let the samples develop equilibrium within 40 days to account for in growth from short lived Alpha energies from ^{226}Ra daughters.

Based on the review of all relevant submitted documents by DON, and the subsequent confirmatory soil analysis by EMB, EMB recommends radiological unrestricted release for Building Site 383. EMB reviewed all relevant radiological documents based on current guidance. This review meets requirements under California Code of Regulations Title17, Section 30256.

If you need further assistance, please contact Kelvin Yamada at 916-449-5661 or via email Kelvin.Yamada@cdph.ca.gov.



Matthew Rodriguez
Secretary for
Environmental Protection



Department of Toxic Substances Control

Deborah O. Raphael, Director
700 Heinz Avenue
Berkeley, California 94710-2721



Edmund G. Brown Jr.
Governor

October 11, 2013

Mr. Keith Forman
Department of the Navy
1455 Frazee Road Suite 900
San Diego, CA 92108-4310

RADIOLOGICAL UNRESTRICTED RELEASE FOR THE SOUTH PIER AREA, PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

Dear Mr. Forman:

Thank you for the opportunity to review the Final Final Status Survey Report for the South Pier Area at Hunters Point Naval Shipyard, San Francisco, California dated June 2013 (Final Report). Comments to a Draft Final Status Survey Report were provided by the Department of Toxic Substances Control (DTSC) on March 6, 2013 and the California Department of Public Health – Environmental Health Branch (CDPH-EMB) on March 20, 2013. The Final Report has been adequately revised to incorporate and address all comments.

The South Pier Area (South Pier) is located to the north of Gun Mole Pier in Work Area 30 within Parcel D-1 at Hunters Point Naval Shipyard. This final status survey (FSS) report describes the survey and remediation of South Pier soil and remaining infrastructure only. South Pier is approximately 100 feet wide by 1,000 feet long and is constructed of concrete-reinforced wood cofferdams that were floated into place and filled with rock and dredge spoils. Remaining structures present on South Pier include the Building 311 foundation, the outer pier wall and utility access hoods, a subgrade utility pipe chase, and miscellaneous electrical service pad or vaults (all constructed of concrete). The land portions of Berths 10 through 13 (considered to be the 50 feet of land adjacent to water's edge) were addressed by this work. Radiological impacts to Berths 10 through 13 may have resulted from berthing of Operations Crossroads ships, berthing of the YGN-73 (radioactive waste disposal barge), and usage by the Naval Radiological Defense Laboratory (berthing of experimental barges and YAGs-39 and -40). YAG-39 (SS George Eastman) and YAG-40 (SS Grandville S. Hall) were Liberty Ships converted to U.S. Department of the Navy ships and were utilized as support vessels in atomic weapons tests. The radionuclides of concern for South Pier are

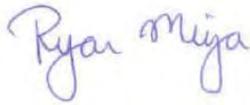
Mr. Keith Forman
October 11, 2013
Page 2

cesium-137 (¹³⁷Cs), plutonium-239 (²³⁹Pu), radium-226 (²²⁶Ra), and strontium-90 (⁹⁰Sr).
The planned future use of the area is as a maritime-industrial area.

Thank you for coordinating with and transferring soil samples to CDPH-EMB in order to conduct their own independent laboratory analysis. Enclosed please find CDPH-EMB's memorandum recommending radiological unrestricted release for the South Pier Births 10 through 13. DTSC concurs with CDPH-EMB's memorandum supporting release for unrestricted use, with respect to radiological issues, at the former South Pier Area.

If you have any questions, please contact me at 510-540-3775 or by e-mail at Ryan.Miya@dtsc.ca.gov.

Sincerely,



Digitally signed by Ryan Miya
DN: cn=Ryan Miya, o=DTSC, ou,
email=Ryan.Miya@dtsc.ca.gov, c=US
Date: 2013.10.11 16:54:41 -07'00'

Ryan Miya, Ph.D.
Senior Environmental Scientist
Brownfields and Environmental Restoration
Program - Berkeley

Enclosure

E-mail distribution with enclosure:

Mr. Craig Cooper, U.S. Environmental Protection Agency Region IX
Mr. Ross Steenson, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Tina Low, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Amy Brownell, City of San Francisco
Ms. Catherine Haran, Department of the Navy
Mr. Christopher Yantos, Department of the Navy
Ms. Tracy Jue, California Department of Public Health
Mr. Ron Pilorin, California Department of Public Health
Ms. Leslie Lundgren, CH2M HILL
Mr. Leon Muhammad, Community resident
Dr. Ray Tompkins, Community resident
Ms. Diane Wesley Smith, Community resident
Ms. Marie Harrison, Greenaction
Mr. Alex Lantsberg, IBNA Boardmember



California Department of Public Health
MEMORANDUM

DATE: October 10, 2013

TO: Stephen Woods, Department of Defense Project Manager
Center for Environmental Health
1500 Capitol Avenue, MS 0511

VIA: David Mazzer, Ph.D, Acting Chief
Division Drinking Water and Environmental Management
1616 Capitol Avenue, MS 7400

FROM: Kelvin Yamada, Chief
Environmental Management Branch
1616 Capitol Avenue, MS 7402

Subject: Radiological Unrestricted Release Recommendation for South Pier Berths 10-13

Through the California Department of Toxic Substances Control (DTSC), the US Department of Navy (DON) seeks a radiological unrestricted release recommendation (RURR) from the Environmental Management Branch (EMB), California Department of Public Health (CDPH) for South Pier Berths 10-13 within the former Hunters Point Shipyard. The DON request for a RURR on the Former South Pier Berths 10-13. EMB has completed its review of the submitted DON documentation associated with identification of the radionuclide of concern, its location of use and investigative surveys prior to closure.

This RURR is restricted to the specific Survey Units (SUs) the DON performed surveys on Berths 10-13 of South Pier. The specific SUs are:

1. SP01-SU1 Class 1 (918 m²)
2. SP02-SU2 Class 1 (933 m²)
3. SP03-SU3 Class 1 (934 m²)
4. SP04-SU4 Class 1 (938 m²)
5. SP05-SU5 Class 1 (940 m²)
6. SP06-SU6 Class 1 (924 m²)
7. SP07-SU7 Class 1 (918 m²)
8. SP08-SU8 Class 1 (891 m²)
9. SP09-SU9 Class 1 (920 m²)
10. SP10-SU10 Class 1 (918 m²)
11. SP11-SU11 Class 1 (920 m²)
12. SP12 SU12 Class 1 (916 m²)
13. SP13SU13 Class 1 (183 m²)
14. SP14SU14 Class 2 (216 m²)

The South Pier is located in Parcel D-1 North of the Gun Mole Pier. The land portions in Berths 10-13 are radiologically impacted due to berthing of Operations Crossroads ships, radioactive waste disposal barge, and usage of Naval by the Radiological Defense Laboratory. The radionuclides of concern within the South Pier were Cesium-137 (^{137}Cs), Radium-226 (^{226}Ra), and Strontium-90 (^{90}Sr). The South Pier is constructed in concrete reinforced wood cofferdams that were floated into place and filled with rock and dredge. The DON surveyed the radiologically impacted Berths 10-13 and remediated the radiological impacted areas.

The DON conducted surface gamma walk over surveys and collected soil, asphalt, concrete and swipe samples analyzed by gamma spectroscopy. The samples from soil and asphalt showed exceeding results above the release criteria. The DON remediated 245 cubic yards from the designated Class 1 SU's

The Navy collected soil samples and solid samples for all the Class 1 SU's and conducted 100 percent scan survey on all survey units. All the soil samples were collected by the DON with one duplicate soil sample provided to CDPH for confirmatory testing. It should be noted that the ^{137}CS and ^{226}Ra (186 keV peak) values recorded by the CDPH are above the background level. The 186 keV value for ^{226}Ra is at or above background due to interference from the ^{235}U with the similar energy as ^{226}Ra . CDPH decided to quantify both ^{226}Ra soil and let the samples develop equilibrium within 40 days to account for in growth from short lived Alpha energies from ^{226}Ra daughters.

Based on the review of all relevant submitted documents by DON, and the subsequent confirmatory soil analysis by EMB, EMB recommends radiological unrestricted release for South Pier Berths 10-13. EMB reviewed all relevant radiological documents based on current guidance. This review meets requirements under Title 17 California Code of Regulations, Section 30256.

If you need further assistance, please contact Kelvin Yamada at 916-449-5661 or via email Kelvin.Yamada@cdph.ca.gov.



Matthew Rodriguez
Secretary for
Environmental Protection



Department of Toxic Substances Control

Deborah O. Raphael, Director
700 Heinz Avenue
Berkeley, California 94710-2721



Edmund G. Brown Jr.
Governor

March 18, 2013

Mr. Keith Forman
Department of the Navy
1455 Frazee Road Suite 900
San Diego, CA 92108-4310

RADIOLOGICAL RELEASE FOR UNRESTRICTED USE FOR BUILDING 274,
PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

Dear Mr. Forman:

Thank you for the opportunity to review the Final Final Status Survey Results for Building 274 at Hunters Point Naval Shipyard, San Francisco, California dated October 8, 2012 (Final Report). Comments to a Draft Final Status Survey Report were provided by the Department of Toxic Substances Control (DTSC) on September 10, 2012 and the California Department of Public Health – Environmental Health Branch (CDPH-EMB) on September 12, 2012. The Final Report has been adequately revised to incorporate and address all comments.

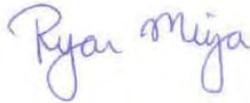
Building 274 is located on 3rd Avenue between E Street and Morrell Street within Parcel D-1. Building 274 is a shop building with a shallow gable roof and corrugated metal siding, measuring 100 feet by 40 feet. Interior rooms within Building 274 (prior to removal in preparation of the final survey) were built with traditional wood and sheetrock materials. Interior rooms consisted of nine enclosed rooms, two toilet facilities, and a large “open air” work area. The floor of Building 274 consists of a concrete pad. Building 274 was previously used for decontamination training and office space. While the building is currently vacant and unoccupied, the planned future use of the area is identified as an industrial use area.

Thank you for coordinating with CDPH-EMB to allow them to conduct their own post-remediation independent confirmation scan in Building 274 on December 19, 2012. Enclosed please find CDPH-EMB's memorandum recommending radiological unrestricted release for Building 274. DTSC concurs with CDPH-EMB's memorandum supporting release for unrestricted use, with respect to radiological issues, at Building 274.

Mr. Forman
March 18, 2013
Page 2

If you have any questions, please contact me at 510-540-3775 or by e-mail at rmiya@dtsc.ca.gov.

Sincerely,



Digitally signed by Ryan Miya
DN: cn=Ryan Miya, o=DTSC, ou,
email=Ryan.Miya@dtsc.ca.gov, c=US
Date: 2013.03.18 10:35:13 -07'00'

Ryan Miya
Senior Hazardous Substances Scientist
Brownfields and Environmental Restoration
Program - Berkeley

Enclosure

E-mail distribution with enclosure:

Mr. Craig Cooper, U.S. Environmental Protection Agency Region IX
Mr. Ross Steenson, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Tina Low, Regional Water Quality Control Board, San Francisco Bay Region
Ms. Amy Brownell, City of San Francisco
Ms. Melanie Kito, Department of the Navy
Mr. Chris Yantos, Department of the Navy
Ms. Tracy Jue, California Department of Public Health
Mr. Larry Morgan, California Department of Public Health
Ms. Leslie Lundgren, CH2M HILL
Mr. Leon Muhammad, Community resident
Dr. Ray Tompkins, Community resident
Ms. Diane Wesley Smith, Community resident
Ms. Marie Harrison, Greenaction
Mr. Alex Lantsberg, IBNA Boardmember



California Department of Public Health
MEMORANDUM

DATE: March 15, 2013

TO: Stephen Woods, Department of Defense Project Manager
Center for Environmental Health
1500 Capitol Avenue, MS 0511 *Stephen Woods*

VIA: *for* Leah Godsey Walker, Chief *Drinking Water*
Division Drinking Water and Environmental Management
1616 Capitol Avenue, MS 7400

FROM: Kelvin Yamada, Branch Chief *Mark Godsey for*
Environmental Management Branch
1616 Capitol Avenue, MS 7402
916-449-5661

Subject: Radiological Unrestricted Release Recommendation for Building 274
Located in Parcel D-1, Hunters Point Shipyard, San Francisco, California

Through the California Department of Toxic Substances Control (DTSC), the US Department of Navy (DON) seeks a radiological unrestricted release recommendation (RURR) from the Environmental Management Branch (EMB) of the California Department of Public Health (CDPH) for Building 274 within Parcel D-1 on Hunter Point Shipyard (HPS). The EMB has reviewed relevant submitted DON documentation associated with identification of radiological contamination, and subsequent remediation of contamination from Building 274.

Building 274 (B274) is a single story wood framed building sited on about 4,000 square feet area within Parcel D-1. B274 was previously used for decontamination training and storage of radioactive materials. DON personnel were trained to decontaminate ships and equipment by sand blasting and other means. The radionuclides of concern within B274 were Cesium-137, Radium-226, and Strontium-90. In keeping with Multi-Agency Radiation Survey and Site Investigation Manual, the DON conducted a survey with fixed static gross alpha and beta emissions, and conducted static scans measurements for gamma radiation. There were eight survey units in the building.

The EMB reviewed all relevant radiological documents based on current guidance, and this review meets requirements under California Code of Regulations, Title 17, Section 30256. Based on the review of all relevant submitted documents by DON, and confirmatory analysis of completed surveys by EMB, EMB recommends radiological unrestricted release for Building 274.

If you need further assistance, please contact Kelvin.

Appendix O
Clean Import Fill Data

JERICO BACKFILL

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-001

Radiochemistry

Lab Sample ID: F1F020455-001
 Work Order: MJ0CQ
 Matrix: SOLID

Date Collected: 05/13/11 1000
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.237		0.153		0.086	30	06/03/11	06/16/11
Americium 241	0.00712	U	0.0852		0.069	30	06/03/11	06/16/11
Bismuth 212	0.140	U	0.298		0.224	30	06/03/11	06/16/11
Bismuth 214	0.369		0.111		0.045	30	06/03/11	06/16/11
Cesium 137	0.0124	U	0.0414	0.0700	0.032	30	06/03/11	06/16/11
Cobalt 60	0.0	U	0.0767		0.063	30	06/03/11	06/16/11
Europium 152	0.00712	U	0.101		0.082	30	06/03/11	06/16/11
Europium 154	0.0476	U	0.296		0.236	30	06/03/11	06/16/11
Lead 210	-0.00360	U	0.930	1.50	0.766	30	06/03/11	06/16/11
Lead 212	0.368		0.114		0.055	30	06/03/11	06/16/11
Lead 214	0.395		0.120		0.059	30	06/03/11	06/16/11
Potassium 40	10.8		1.62		0.265	30	06/03/11	06/16/11
Protactinium 234	-0.0169	U	0.0944		0.076	30	06/03/11	06/16/11
Radium (226)	0.369	J	0.111	0.700	0.045	30	06/03/11	06/16/11
Thallium 208	0.148		0.0500		0.018	30	06/03/11	06/16/11
Thorium 232	0.237		0.153		0.086	30	06/03/11	06/16/11
Thorium 234	0.0	U	0.858		0.707	30	06/03/11	06/16/11
Uranium 235	0.0383	U	0.164		0.132	30	06/03/11	06/16/11

NOTE(S)

Data are incomplete without the case narrative.
 Bold results are greater than the MDL.

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-001 DUP

Radiochemistry

Lab Sample ID: F1F020455-001X
 Work Order: MJOCQ
 Matrix: SOLID

Date Collected: 05/13/11 1000
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g			Batch # 1154137	Yld %
Actinium 228	0.434		0.168		0.115	30	06/03/11	06/16/11
Americium 241	0.00207	U	0.0948		0.077	30	06/03/11	06/16/11
Bismuth 212	0.142	U	0.317		0.250	30	06/03/11	06/16/11
Bismuth 214	0.413		0.124		0.051	30	06/03/11	06/16/11
Cesium 137	0.000253	U	0.0384	0.0700	0.031	30	06/03/11	06/16/11
Cobalt 60	-0.0166	U	0.0524		0.040	30	06/03/11	06/16/11
Europium 152	-0.00746	U	0.0989		0.080	30	06/03/11	06/16/11
Europium 154	-0.0568	U	0.348		0.278	30	06/03/11	06/16/11
Lead 210	1.36	J	1.75	1.50	1.17	30	06/03/11	06/16/11
Lead 212	0.316		0.128		0.072	30	06/03/11	06/16/11
Lead 214	0.371		0.103		0.048	30	06/03/11	06/16/11
Potassium 40	9.69		1.57		0.305	30	06/03/11	06/16/11
Protactinium 234	-0.0515	U	0.116		0.091	30	06/03/11	06/16/11
Radium (226)	0.413	J	0.124	0.700	0.051	30	06/03/11	06/16/11
Thallium 208	0.104		0.0519		0.030	30	06/03/11	06/16/11
Thorium 232	0.434		0.168		0.115	30	06/03/11	06/16/11
Thorium 234	0.131	U	0.903		0.783	30	06/03/11	06/16/11
Uranium 235	0.0684	U	0.154		0.124	30	06/03/11	06/16/11

NOTE(S)

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Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-002

Radiochemistry

Lab Sample ID: F1F020455-002
 Work Order: MJOCR
 Matrix: SOLID

Date Collected: 05/13/11 1005
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.209		0.233		0.152	30	06/03/11	06/12/11
Americium 241	0.0134	U	0.114		0.094	30	06/03/11	06/12/11
Bismuth 212	0.0544	U	0.472		0.380	30	06/03/11	06/12/11
Bismuth 214	0.297		0.143		0.067	30	06/03/11	06/12/11
Cesium 137	0.0179	U	0.0634	0.0700	0.054	30	06/03/11	06/12/11
Cobalt 60	-0.0230	U	0.918		0.034	30	06/03/11	06/12/11
Europium 152	0.0394	U	0.0878		0.063	30	06/03/11	06/12/11
Europium 154	0.175	U	0.560		0.432	30	06/03/11	06/12/11
Lead 210	-1.06	U	42.3	1.50	1.24	30	06/03/11	06/12/11
Lead 212	0.286		0.127		0.061	30	06/03/11	06/12/11
Lead 214	0.429		0.124		0.046	30	06/03/11	06/12/11
Potassium 40	6.70		1.76		0.469	30	06/03/11	06/12/11
Protactinium 234	-0.0353	U	0.121		0.095	30	06/03/11	06/12/11
Radium (226)	0.297	J	0.143	0.700	0.067	30	06/03/11	06/12/11
Thallium 208	0.0540		0.0528		0.035	30	06/03/11	06/12/11
Thorium 232	0.209		0.233		0.152	30	06/03/11	06/12/11
Thorium 234	0.0286	U	0.949		0.839	30	06/03/11	06/12/11
Uranium 235	0.125	U	0.205		0.154	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

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Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-003

Radiochemistry

Lab Sample ID: F1F020455-003
 Work Order: MJOCT
 Matrix: SOLID

Date Collected: 05/13/11 1010
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.262		0.191		0.126	30	06/03/11	06/12/11
Americium 241	0.0253	U	0.0843		0.067	30	06/03/11	06/12/11
Bismuth 212	0.0947	U	0.291		0.226	30	06/03/11	06/12/11
Bismuth 214	0.319		0.107		0.049	30	06/03/11	06/12/11
Cesium 137	0.0115	U	0.0340	0.0700	0.026	30	06/03/11	06/12/11
Cobalt 60	0.0	U	0.0538		0.044	30	06/03/11	06/12/11
Europium 152	-0.0243	U	0.106		0.084	30	06/03/11	06/12/11
Europium 154	-0.0459	U	0.276		0.219	30	06/03/11	06/12/11
Lead 210	0.741	J	0.911	1.50	0.679	30	06/03/11	06/12/11
Lead 212	0.267		0.0896		0.044	30	06/03/11	06/12/11
Lead 214	0.477		0.112		0.056	30	06/03/11	06/12/11
Potassium 40	10.2		1.56		0.263	30	06/03/11	06/12/11
Protactinium 234	0.0459	U	0.117		0.092	30	06/03/11	06/12/11
Radium (226)	0.319	J	0.107	0.700	0.049	30	06/03/11	06/12/11
Thallium 208	0.183		0.0500		0.013	30	06/03/11	06/12/11
Thorium 232	0.262		0.191		0.126	30	06/03/11	06/12/11
Thorium 234	0.114	U	0.629		0.508	30	06/03/11	06/12/11
Uranium 235	0.0814	U	0.184		0.144	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

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Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-004

Radiochemistry

Lab Sample ID: F1F020455-004
 Work Order: MJOCW
 Matrix: SOLID

Date Collected: 05/13/11 1015
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.445		0.145		0.060	30	06/03/11	06/12/11
Americium 241	-0.0262	U	0.104		0.083	30	06/03/11	06/12/11
Bismuth 212	-0.0662	U	2.65		0.215	30	06/03/11	06/12/11
Bismuth 214	0.295		0.125		0.061	30	06/03/11	06/12/11
Cesium 137	-0.00750	U	0.0399	0.0700	0.031	30	06/03/11	06/12/11
Cobalt 60	-0.00605	U	0.0388		0.030	30	06/03/11	06/12/11
Europium 152	-0.00315	U	0.106		0.086	30	06/03/11	06/12/11
Europium 154	-0.0979	U	0.345		0.268	30	06/03/11	06/12/11
Lead 210	1.30	J	1.59	1.50	1.10	30	06/03/11	06/12/11
Lead 212	0.332		0.111		0.062	30	06/03/11	06/12/11
Lead 214	0.292		0.111		0.056	30	06/03/11	06/12/11
Potassium 40	8.42		1.55		0.497	30	06/03/11	06/12/11
Protactinium 234	0.0494	U	0.124		0.098	30	06/03/11	06/12/11
Radium (226)	0.295	J	0.125	0.700	0.061	30	06/03/11	06/12/11
Thallium 208	0.141		0.0568		0.029	30	06/03/11	06/12/11
Thorium 232	0.445		0.145		0.060	30	06/03/11	06/12/11
Thorium 234	0.151	U	0.898		0.780	30	06/03/11	06/12/11
Uranium 235	-0.0478	U	8.09		0.180	30	06/03/11	06/12/11

NOTE(S)

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Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-005

Radiochemistry

Lab Sample ID: F1F020455-005
 Work Order: MJOCX
 Matrix: SOLID

Date Collected: 05/13/11 1020
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.239		0.0986		0.120	30	06/03/11	06/12/11
Americium 241	0.0284	U	0.0703		0.055	30	06/03/11	06/12/11
Bismuth 212	0.108	U	0.301		0.233	30	06/03/11	06/12/11
Bismuth 214	0.376		0.124		0.052	30	06/03/11	06/12/11
Cesium 137	0.0	U	0.0342	0.0700	0.028	30	06/03/11	06/12/11
Cobalt 60	0.00250	U	0.0496		0.040	30	06/03/11	06/12/11
Europium 152	-0.0214	U	0.0884		0.070	30	06/03/11	06/12/11
Europium 154	-0.00701	U	0.299		0.245	30	06/03/11	06/12/11
Lead 210	-0.0190	U	0.858	1.50	0.705	30	06/03/11	06/12/11
Lead 212	0.374		0.114		0.053	30	06/03/11	06/12/11
Lead 214	0.394		0.113		0.047	30	06/03/11	06/12/11
Potassium 40	9.15		1.44		0.227	30	06/03/11	06/12/11
Protactinium 234	-0.00639	U	0.108		0.088	30	06/03/11	06/12/11
Radium (226)	0.376	J	0.124	0.700	0.052	30	06/03/11	06/12/11
Thallium 208	0.0850		0.0427		0.024	30	06/03/11	06/12/11
Thorium 232	0.239		0.0986		0.120	30	06/03/11	06/12/11
Thorium 234	0.0954	U	0.984		0.805	30	06/03/11	06/12/11
Uranium 235	-0.00760	U	0.158		0.129	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

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Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-006

Radiochemistry

Lab Sample ID: F1F020455-006
 Work Order: MJOCO
 Matrix: SOLID

Date Collected: 05/13/11 1025
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.182		0.225		0.174	30	06/03/11	06/12/11
Americium 241	-0.0399	U	0.107		0.085	30	06/03/11	06/12/11
Bismuth 212	0.227	U	0.390		0.290	30	06/03/11	06/12/11
Bismuth 214	0.392		0.153		0.071	30	06/03/11	06/12/11
Cesium 137	-0.00523	U	0.0503	0.0700	0.040	30	06/03/11	06/12/11
Cobalt 60	0.0	U	0.0583		0.048	30	06/03/11	06/12/11
Europium 152	-0.0400	U	0.122		0.096	30	06/03/11	06/12/11
Europium 154	0.00713	U	0.325		0.266	30	06/03/11	06/12/11
Lead 210	-0.0872	U	1.48	1.50	1.16	30	06/03/11	06/12/11
Lead 212	0.306		0.105		0.056	30	06/03/11	06/12/11
Lead 214	0.571		0.146		0.057	30	06/03/11	06/12/11
Potassium 40	9.10		1.57		0.468	30	06/03/11	06/12/11
Protactinium 234	-0.00896	U	0.176		0.144	30	06/03/11	06/12/11
Radium (226)	0.392	J	0.153	0.700	0.071	30	06/03/11	06/12/11
Thallium 208	0.161		0.0575		0.026	30	06/03/11	06/12/11
Thorium 232	0.182		0.225		0.174	30	06/03/11	06/12/11
Thorium 234	0.553	U	1.08		0.806	30	06/03/11	06/12/11
Uranium 235	0.0297	U	0.227		0.189	30	06/03/11	06/12/11

NOTE(S)

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Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-007

Radiochemistry

Lab Sample ID: F1F020455-007
 Work Order: MJOC1
 Matrix: SOLID

Date Collected: 05/13/11 1030
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g			Batch # 1154137	Yld %
Actinium 228	0.204		0.195		0.132	30	06/03/11	06/12/11
Americium 241	0.0539	U	0.0952		0.074	30	06/03/11	06/12/11
Bismuth 212	0.148	U	0.333		0.250	30	06/03/11	06/12/11
Bismuth 214	0.318		0.125		0.063	30	06/03/11	06/12/11
Cesium 137	-0.00258	U	0.0513	0.0700	0.041	30	06/03/11	06/12/11
Cobalt 60	-0.0148	U	0.0676		0.053	30	06/03/11	06/12/11
Europium 152	0.00257	U	0.110		0.090	30	06/03/11	06/12/11
Europium 154	0.0	U	0.258		0.213	30	06/03/11	06/12/11
Lead 210	0.172	U	1.13	1.50	1.01	30	06/03/11	06/12/11
Lead 212	0.378		0.102		0.050	30	06/03/11	06/12/11
Lead 214	0.282		0.115		0.059	30	06/03/11	06/12/11
Potassium 40	7.28		1.51		0.537	30	06/03/11	06/12/11
Protactinium 234	0.0352	U	0.129		0.103	30	06/03/11	06/12/11
Radium (226)	0.318	J	0.125	0.700	0.063	30	06/03/11	06/12/11
Thallium 208	0.226		0.0631		0.023	30	06/03/11	06/12/11
Thorium 232	0.204		0.195		0.132	30	06/03/11	06/12/11
Thorium 234	0.776	U	1.02		0.833	30	06/03/11	06/12/11
Uranium 235	0.0704	U	0.246		0.201	30	06/03/11	06/12/11

NOTE(S)

Data are incomplete without the case narrative.
 Bold results are greater than the MDL.

J Result is greater than sample detection limit but less than stated reporting limit.
 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-008

Radiochemistry

Lab Sample ID: F1F020455-008
 Work Order: MJ0C2
 Matrix: SOLID

Date Collected: 05/13/11 1035
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.220		0.257		0.175	30	06/03/11	06/12/11
Americium 241	-0.0197	U	4.62		0.087	30	06/03/11	06/12/11
Bismuth 212	0.0790	U	0.457		0.362	30	06/03/11	06/12/11
Bismuth 214	0.554		0.162		0.050	30	06/03/11	06/12/11
Cesium 137	-0.0301	U	1.21	0.0700	0.061	30	06/03/11	06/12/11
Cobalt 60	-0.0225	U	0.901		0.034	30	06/03/11	06/12/11
Europium 152	0.0379	U	0.122		0.094	30	06/03/11	06/12/11
Europium 154	0.0	U	0.444		0.366	30	06/03/11	06/12/11
Lead 210	0.447	U	1.14	1.50	0.995	30	06/03/11	06/12/11
Lead 212	0.452		0.131		0.050	30	06/03/11	06/12/11
Lead 214	0.464		0.164		0.072	30	06/03/11	06/12/11
Potassium 40	8.25		1.84		0.224	30	06/03/11	06/12/11
Protactinium 234	-0.00122	U	0.131		0.108	30	06/03/11	06/12/11
Radium (226)	0.554	J	0.162	0.700	0.050	30	06/03/11	06/12/11
Thallium 208	0.105		0.0779		0.051	30	06/03/11	06/12/11
Thorium 232	0.220		0.257		0.175	30	06/03/11	06/12/11
Thorium 234	-0.683	U	27.3		1.03	30	06/03/11	06/12/11
Uranium 235	0.0847	U	0.196		0.151	30	06/03/11	06/12/11

NOTE (S)

Data are incomplete without the case narrative.
 Bold results are greater than the MDL.

J Result is greater than sample detection limit but less than stated reporting limit.
 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.
 F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-009

Radiochemistry

Lab Sample ID: F1F020455-009
 Work Order: MJ0C3
 Matrix: SOLID

Date Collected: 05/13/11 1040
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137		Yld %
Actinium 228	0.282		0.274		0.186	30	06/03/11	06/12/11
Americium 241	-0.0549	U	0.120		0.095	30	06/03/11	06/12/11
Bismuth 212	0.315		0.391		0.258	30	06/03/11	06/12/11
Bismuth 214	0.473		0.170		0.082	30	06/03/11	06/12/11
Cesium 137	0.0263	U	0.0612	0.0700	0.046	30	06/03/11	06/12/11
Cobalt 60	0.0	U	0.0165		0.019	30	06/03/11	06/12/11
Europium 152	0.0169	U	0.142		0.115	30	06/03/11	06/12/11
Europium 154	0.0134	U	0.410		0.336	30	06/03/11	06/12/11
Lead 210	1.06	J	1.33	1.50	1.00	30	06/03/11	06/12/11
Lead 212	0.308		0.146		0.075	30	06/03/11	06/12/11
Lead 214	0.719		0.146		0.068	30	06/03/11	06/12/11
Potassium 40	7.33		1.78		0.645	30	06/03/11	06/12/11
Protactinium 234	-0.00850	U	0.162		0.132	30	06/03/11	06/12/11
Radium (226)	0.473	J	0.170	0.700	0.082	30	06/03/11	06/12/11
Thallium 208	0.0369	U	0.0652		0.050	30	06/03/11	06/12/11
Thorium 232	0.282		0.274		0.186	30	06/03/11	06/12/11
Thorium 234	0.325	U	1.06		0.917	30	06/03/11	06/12/11
Uranium 235	0.149	U	0.277		0.222	30	06/03/11	06/12/11

NOTE (S)

Data are incomplete without the case narrative.
 Bold results are greater than the MDL.

J Result is greater than sample detection limit but less than stated reporting limit.
 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.
 F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-010

Radiochemistry

Lab Sample ID: F1F020455-010
 Work Order: MJ0C5
 Matrix: SOLID

Date Collected: 05/13/11 1045
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.525		0.147		0.053	30	06/03/11	06/12/11
Americium 241	0.0434	U	0.0888		0.069	30	06/03/11	06/12/11
Bismuth 212	0.299		0.338		0.236	30	06/03/11	06/12/11
Bismuth 214	0.406		0.126		0.050	30	06/03/11	06/12/11
Cesium 137	0.00454	U	0.0275	0.0700	0.021	30	06/03/11	06/12/11
Cobalt 60	0.0	U	0.0102		0.011	30	06/03/11	06/12/11
Europium 152	0.0281	U	0.0895		0.070	30	06/03/11	06/12/11
Europium 154	0.0	U	0.254		0.209	30	06/03/11	06/12/11
Lead 210	0.858	U	1.23	1.50	0.954	30	06/03/11	06/12/11
Lead 212	0.338		0.115		0.054	30	06/03/11	06/12/11
Lead 214	0.506		0.104		0.049	30	06/03/11	06/12/11
Potassium 40	8.08		1.44		0.405	30	06/03/11	06/12/11
Protactinium 234	0.00842	U	0.113		0.092	30	06/03/11	06/12/11
Radium (226)	0.406	J	0.126	0.700	0.050	30	06/03/11	06/12/11
Thallium 208	0.0683		0.0544		0.038	30	06/03/11	06/12/11
Thorium 232	0.525		0.147		0.053	30	06/03/11	06/12/11
Thorium 234	0.741		0.932		0.720	30	06/03/11	06/12/11
Uranium 235	-0.0165	U	0.208		0.170	30	06/03/11	06/12/11

NOTE(S)

Data are incomplete without the case narrative.
 Bold results are greater than the MDL.

J Result is greater than sample detection limit but less than stated reporting limit.
 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-011

Radiochemistry

Lab Sample ID: F1F020455-011
 Work Order: MJOC6
 Matrix: SOLID

Date Collected: 05/13/11 1050
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137		Yld %
Actinium 228	0.170		0.0931		0.154	30	06/03/11	06/12/11
Americium 241	-0.0248	U	0.0962		0.077	30	06/03/11	06/12/11
Bismuth 212	0.250		0.319		0.232	30	06/03/11	06/12/11
Bismuth 214	0.409		0.115		0.045	30	06/03/11	06/12/11
Cesium 137	-0.00515	U	0.0461	0.0700	0.037	30	06/03/11	06/12/11
Cobalt 60	0.0	U	0.0113		0.013	30	06/03/11	06/12/11
Europium 152	0.0324	U	0.0779		0.058	30	06/03/11	06/12/11
Europium 154	-0.0925	U	0.302		0.231	30	06/03/11	06/12/11
Lead 210	0.363	U	1.40	1.50	1.26	30	06/03/11	06/12/11
Lead 212	0.319		0.0964		0.056	30	06/03/11	06/12/11
Lead 214	0.538		0.136		0.059	30	06/03/11	06/12/11
Potassium 40	6.84		1.42		0.499	30	06/03/11	06/12/11
Protactinium 234	0.0962		0.104		0.075	30	06/03/11	06/12/11
Radium (226)	0.409	J	0.115	0.700	0.045	30	06/03/11	06/12/11
Thallium 208	0.0702		0.0518		0.038	30	06/03/11	06/12/11
Thorium 232	0.170		0.0931		0.154	30	06/03/11	06/12/11
Thorium 234	0.273	U	0.964		0.827	30	06/03/11	06/12/11
Uranium 235	0.00659	U	0.169		0.144	30	06/03/11	06/12/11

NOTE (S)

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 Bold results are greater than the MDL.

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-012

Radiochemistry

Lab Sample ID: F1F020455-012
 Work Order: MJOC8
 Matrix: SOLID

Date Collected: 05/13/11 1055
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.181		0.143		0.086	30	06/03/11	06/12/11
Americium 241	0.0539	U	0.0857		0.066	30	06/03/11	06/12/11
Bismuth 212	0.0936	U	0.314		0.245	30	06/03/11	06/12/11
Bismuth 214	0.461		0.130		0.048	30	06/03/11	06/12/11
Cesium 137	0.00546	U	0.0404	0.0700	0.032	30	06/03/11	06/12/11
Cobalt 60	0.0137	U	0.0565		0.044	30	06/03/11	06/12/11
Europium 152	-0.0326	U	0.117		0.093	30	06/03/11	06/12/11
Europium 154	0.0197	U	0.333		0.272	30	06/03/11	06/12/11
Lead 210	-0.639	U	1.15	1.50	0.898	30	06/03/11	06/12/11
Lead 212	0.335		0.121		0.053	30	06/03/11	06/12/11
Lead 214	0.366		0.102		0.063	30	06/03/11	06/12/11
Potassium 40	9.59		1.52		0.240	30	06/03/11	06/12/11
Protactinium 234	0.0173	U	0.139		0.113	30	06/03/11	06/12/11
Radium (226)	0.461	J	0.130	0.700	0.048	30	06/03/11	06/12/11
Thallium 208	0.0671		0.0473		0.032	30	06/03/11	06/12/11
Thorium 232	0.181		0.143		0.086	30	06/03/11	06/12/11
Thorium 234	0.350	U	0.894		0.713	30	06/03/11	06/12/11
Uranium 235	0.0983	U	0.178		0.137	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-013

Radiochemistry

Lab Sample ID: F1F020455-013
 Work Order: MJOC9
 Matrix: SOLID

Date Collected: 05/13/11 1100
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.230		0.197		0.143	30	06/03/11	06/12/11
Americium 241	0.0679	U	0.101		0.078	30	06/03/11	06/12/11
Bismuth 212	0.200	U	0.397		0.300	30	06/03/11	06/12/11
Bismuth 214	0.279		0.126		0.081	30	06/03/11	06/12/11
Cesium 137	-0.000679	U	0.0514	0.0700	0.042	30	06/03/11	06/12/11
Cobalt 60	0.00676	U	0.0530		0.042	30	06/03/11	06/12/11
Europium 152	0.0446	U	0.118		0.092	30	06/03/11	06/12/11
Europium 154	0.0	U	0.0675		0.078	30	06/03/11	06/12/11
Lead 210	0.173	U	1.48	1.50	1.29	30	06/03/11	06/12/11
Lead 212	0.318		0.103		0.056	30	06/03/11	06/12/11
Lead 214	0.480		0.134		0.066	30	06/03/11	06/12/11
Potassium 40	10.6		1.70		0.473	30	06/03/11	06/12/11
Protactinium 234	0.0	U	0.143		0.118	30	06/03/11	06/12/11
Radium (226)	0.279	J	0.126	0.700	0.081	30	06/03/11	06/12/11
Thallium 208	0.0385	U	0.0576		0.046	30	06/03/11	06/12/11
Thorium 232	0.230		0.197		0.143	30	06/03/11	06/12/11
Thorium 234	0.992		1.17		0.831	30	06/03/11	06/12/11
Uranium 235	-0.0247	U	0.676		0.179	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

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Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-014

Radiochemistry

Lab Sample ID: F1F020455-014
 Work Order: MJODA
 Matrix: SOLID

Date Collected: 05/13/11 1105
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.259		0.186		0.113	30	06/03/11	06/12/11
Americium 241	-0.000487	U	0.0984		0.081	30	06/03/11	06/12/11
Bismuth 212	0.230	U	0.342		0.244	30	06/03/11	06/12/11
Bismuth 214	0.332		0.130		0.064	30	06/03/11	06/12/11
Cesium 137	0.0343	U	0.0540	0.0700	0.040	30	06/03/11	06/12/11
Cobalt 60	0.0116	U	0.0526		0.041	30	06/03/11	06/12/11
Europium 152	-0.0325	U	0.124		0.098	30	06/03/11	06/12/11
Europium 154	0.0189	U	0.355		0.289	30	06/03/11	06/12/11
Lead 210	-0.233	U	1.63	1.50	0.993	30	06/03/11	06/12/11
Lead 212	0.182		0.0945		0.067	30	06/03/11	06/12/11
Lead 214	0.419		0.115		0.070	30	06/03/11	06/12/11
Potassium 40	10.3		1.70		0.346	30	06/03/11	06/12/11
Protactinium 234	0.0294	U	0.111		0.088	30	06/03/11	06/12/11
Radium (226)	0.332	J	0.130	0.700	0.064	30	06/03/11	06/12/11
Thallium 208	0.0705		0.0548		0.039	30	06/03/11	06/12/11
Thorium 232	0.259		0.186		0.113	30	06/03/11	06/12/11
Thorium 234	0.457	U	0.917		0.766	30	06/03/11	06/12/11
Uranium 235	0.0121	U	0.196		0.165	30	06/03/11	06/12/11

NOTE (S)

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J Result is greater than sample detection limit but less than stated reporting limit.
 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-015

Radiochemistry

Lab Sample ID: F1F020455-015
 Work Order: MJ0DC
 Matrix: SOLID

Date Collected: 05/13/11 1110
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137		Yld %
Actinium 228	0.199		0.208		0.127	30	06/03/11	06/12/11
Americium 241	-0.0216	U	0.863		0.112	30	06/03/11	06/12/11
Bismuth 212	0.306		0.441		0.301	30	06/03/11	06/12/11
Bismuth 214	0.290		0.137		0.065	30	06/03/11	06/12/11
Cesium 137	0.00302	U	0.0702	0.0700	0.061	30	06/03/11	06/12/11
Cobalt 60	-0.0236	U	0.942		0.035	30	06/03/11	06/12/11
Europium 152	0.0	U	0.151		0.125	30	06/03/11	06/12/11
Europium 154	-0.0362	U	0.580		0.472	30	06/03/11	06/12/11
Lead 210	0.611	U	1.34	1.50	1.15	30	06/03/11	06/12/11
Lead 212	0.380		0.125		0.056	30	06/03/11	06/12/11
Lead 214	0.505		0.151		0.093	30	06/03/11	06/12/11
Potassium 40	10.1		2.10		0.234	30	06/03/11	06/12/11
Protactinium 234	-0.00257	U	0.110		0.090	30	06/03/11	06/12/11
Radium (226)	0.290	J	0.137	0.700	0.065	30	06/03/11	06/12/11
Thallium 208	0.0456		0.0610		0.044	30	06/03/11	06/12/11
Thorium 232	0.199		0.208		0.127	30	06/03/11	06/12/11
Thorium 234	1.03		1.15		0.921	30	06/03/11	06/12/11
Uranium 235	-0.000744	U	0.205		0.168	30	06/03/11	06/12/11

NOTE(S)

Data are incomplete without the case narrative.
 Bold results are greater than the MDL.

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-016

Radiochemistry

Lab Sample ID: F1F020455-016
 Work Order: MJ0DD
 Matrix: SOLID

Date Collected: 05/13/11 1115
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.186		0.241		0.171	30	06/03/11	06/12/11
Americium 241	-0.0349	U	0.106		0.084	30	06/03/11	06/12/11
Bismuth 212	0.247	U	0.428		0.310	30	06/03/11	06/12/11
Bismuth 214	0.605		0.154		0.021	30	06/03/11	06/12/11
Cesium 137	0.0167	U	0.0585	0.0700	0.045	30	06/03/11	06/12/11
Cobalt 60	-0.00689	U	0.0588		0.046	30	06/03/11	06/12/11
Europium 152	-0.0280	U	0.145		0.116	30	06/03/11	06/12/11
Europium 154	0.00245	U	0.374		0.308	30	06/03/11	06/12/11
Lead 210	-0.236	U	1.33	1.50	1.07	30	06/03/11	06/12/11
Lead 212	0.344		0.108		0.052	30	06/03/11	06/12/11
Lead 214	0.627		0.151		0.041	30	06/03/11	06/12/11
Potassium 40	10.1		1.92		0.323	30	06/03/11	06/12/11
Protactinium 234	0.0369	U	0.118		0.093	30	06/03/11	06/12/11
Radium (226)	0.605	J	0.154	0.700	0.021	30	06/03/11	06/12/11
Thallium 208	0.0361	U	0.0667		0.052	30	06/03/11	06/12/11
Thorium 232	0.186		0.241		0.171	30	06/03/11	06/12/11
Thorium 234	0.454	U	1.01		0.868	30	06/03/11	06/12/11
Uranium 235	0.0985	U	0.262		0.213	30	06/03/11	06/12/11

NOTE(S)

Data are incomplete without the case narrative.
 Bold results are greater than the MDL.

J Result is greater than sample detection limit but less than stated reporting limit.
 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-017

Radiochemistry

Lab Sample ID: F1F020455-017
 Work Order: MJODE
 Matrix: SOLID

Date Collected: 05/13/11 1120
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137		Yld %
Aotinium 228	0.517		0.170		0.031	30	06/03/11	06/12/11
Americium 241	0.0451	U	0.0853		0.066	30	06/03/11	06/12/11
Bismuth 212	0.126	U	0.379		0.296	30	06/03/11	06/12/11
Bismuth 214	0.462		0.147		0.060	30	06/03/11	06/12/11
Cesium 137	-0.00491	U	0.0422	0.0700	0.034	30	06/03/11	06/12/11
Cobalt 60	0.0	U	0.0107		0.012	30	06/03/11	06/12/11
Europium 152	-0.0268	U	0.125		0.100	30	06/03/11	06/12/11
Europium 154	0.00484	U	0.338		0.278	30	06/03/11	06/12/11
Lead 210	1.17	J	0.948	1.50	0.658	30	06/03/11	06/12/11
Lead 212	0.476		0.110		0.042	30	06/03/11	06/12/11
Lead 214	0.486		0.122		0.047	30	06/03/11	06/12/11
Potassium 40	9.83		1.58		0.286	30	06/03/11	06/12/11
Protactinium 234	-0.0569	U	0.144		0.114	30	06/03/11	06/12/11
Radium (226)	0.462	J	0.147	0.700	0.060	30	06/03/11	06/12/11
Thallium 208	0.0800		0.0518		0.034	30	06/03/11	06/12/11
Thorium 232	0.517		0.170		0.031	30	06/03/11	06/12/11
Thorium 234	2.07		0.973		0.480	30	06/03/11	06/12/11
Uranium 235	0.0665	U	0.156		0.121	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-018

Radiochemistry

Lab Sample ID: F1F020455-018
 Work Order: MJODG
 Matrix: SOLID

Date Collected: 05/13/11 1125
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.459		0.171		0.059	30	06/03/11	06/12/11
Americium 241	-0.00542	U	0.109		0.089	30	06/03/11	06/12/11
Bismuth 212	0.0180	U	0.385		0.323	30	06/03/11	06/12/11
Bismuth 214	0.347		0.132		0.079	30	06/03/11	06/12/11
Cesium 137	0.0111	U	0.0449	0.0700	0.035	30	06/03/11	06/12/11
Cobalt 60	0.000504	U	0.0432		0.035	30	06/03/11	06/12/11
Europium 152	0.000375	U	0.101		0.083	30	06/03/11	06/12/11
Europium 154	0.0855	U	0.301		0.232	30	06/03/11	06/12/11
Lead 210	-0.00699	U	1.34	1.50	1.23	30	06/03/11	06/12/11
Lead 212	0.260		0.113		0.064	30	06/03/11	06/12/11
Lead 214	0.413		0.112		0.063	30	06/03/11	06/12/11
Potassium 40	8.40		1.55		0.524	30	06/03/11	06/12/11
Protactinium 234	0.00126	U	0.124		0.102	30	06/03/11	06/12/11
Radium (226)	0.347	J	0.132	0.700	0.079	30	06/03/11	06/12/11
Thallium 208	0.0787		0.0621		0.046	30	06/03/11	06/12/11
Thorium 232	0.459		0.171		0.059	30	06/03/11	06/12/11
Thorium 234	0.304	U	0.995		0.846	30	06/03/11	06/12/11
Uranium 235	0.0779	U	0.213		0.173	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-019

Radiochemistry

Lab Sample ID: F1F020455-019
 Work Order: MJ0DH
 Matrix: SOLID

Date Collected: 05/13/11 1130
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137	Yld %	
Actinium 228	0.327		0.146		0.090	30	06/03/11	06/12/11
Americium 241	0.0	U	0.0995		0.081	30	06/03/11	06/12/11
Bismuth 212	0.193	U	0.311		0.228	30	06/03/11	06/12/11
Bismuth 214	0.453		0.111		0.036	30	06/03/11	06/12/11
Cesium 137	-0.00443	U	0.0430	0.0700	0.034	30	06/03/11	06/12/11
Cobalt 60	0.000397	U	0.0376		0.030	30	06/03/11	06/12/11
Europium 152	0.0152	U	0.0886		0.071	30	06/03/11	06/12/11
Europium 154	-0.210	U	0.417		0.318	30	06/03/11	06/12/11
Lead 210	-0.290	U	0.946	1.50	0.755	30	06/03/11	06/12/11
Lead 212	0.300		0.102		0.048	30	06/03/11	06/12/11
Lead 214	0.362		0.127		0.069	30	06/03/11	06/12/11
Potassium 40	10.1		1.54		0.233	30	06/03/11	06/12/11
Protactinium 234	-0.0788	U	0.146		0.116	30	06/03/11	06/12/11
Radium (226)	0.453	J	0.111	0.700	0.036	30	06/03/11	06/12/11
Thallium 208	0.0618		0.0475		0.033	30	06/03/11	06/12/11
Thorium 232	0.327		0.146		0.090	30	06/03/11	06/12/11
Thorium 234	0.0217	U	0.645		0.530	30	06/03/11	06/12/11
Uranium 235	0.0156	U	0.199		0.163	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.
 F1F020455

Tetra Tech EC, Inc.

Client Sample ID: 04A-DIA-020

Radiochemistry

Lab Sample ID: F1F020455-020
 Work Order: MJ0DJ
 Matrix: SOLID

Date Collected: 05/13/11 1135
 Date Received: 06/02/11 1305

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDL	Count Time	Prep Date	Analysis Date
Gamma Ra-226 & hits by EPA 901.1 MOD				pCi/g		Batch # 1154137		Yld %
Actinium 228	0.515		0.175		0.084	30	06/03/11	06/12/11
Americium 241	-0.000444	U	0.104		0.085	30	06/03/11	06/12/11
Bismuth 212	0.158	U	0.384		0.294	30	06/03/11	06/12/11
Bismuth 214	0.486		0.160		0.071	30	06/03/11	06/12/11
Cesium 137	-0.00280	U	0.0571	0.0700	0.046	30	06/03/11	06/12/11
Cobalt 60	-0.0181	U	0.0699		0.055	30	06/03/11	06/12/11
Europium 152	-0.00529	U	0.123		0.101	30	06/03/11	06/12/11
Europium 154	-0.129	U	0.430		0.336	30	06/03/11	06/12/11
Lead 210	0.135	U	1.41	1.50	1.24	30	06/03/11	06/12/11
Lead 212	0.327		0.108		0.060	30	06/03/11	06/12/11
Lead 214	0.536		0.139		0.072	30	06/03/11	06/12/11
Potassium 40	11.3		1.79		0.486	30	06/03/11	06/12/11
Protactinium 234	-0.0682	U	0.178		0.142	30	06/03/11	06/12/11
Radium (226)	0.486	J	0.160	0.700	0.071	30	06/03/11	06/12/11
Thallium 208	0.0619		0.0678		0.052	30	06/03/11	06/12/11
Thorium 232	0.515		0.175		0.084	30	06/03/11	06/12/11
Thorium 234	-0.319	U	1.60		0.935	30	06/03/11	06/12/11
Uranium 235	0.168	U	0.224		0.174	30	06/03/11	06/12/11

NOTE(S)

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 U Result is less than the sample detection limit.

The MDL is an estimate of the measured concentration at which there is a 99% confidence that a given analyte is given sample matrix. This is functionally analogous to the "critical value" or the "limit of detection".

Ra-226 results analyzed by EPA 901.1 MOD were calculated and reported from the 46.09 percent abundant 609.31 KeV line of Bi-214.

F1F020455

Appendix P
Response to Comments Document

RESPONSE TO COMMENTS
DRAFT RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT, RADIOLOGICAL SURVEYS OF BUILDINGS AND GROUND SURFACES, AND
STORM DRAIN AND SANITARY SEWER REMOVAL
PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

<p>Comments from Craig Cooper Superfund Project Manager US EPA</p> <p>Comments dated: November 12, 2013</p>	
Specific Comments	Response
<p>Comment 1. General Comment.</p> <p>It is EPA understanding that the Navy’s radiological removal actions in Parcel D-1 are still ongoing and the subject Rad-RACR is only for the “Phase 1” portion of Parcel D-1. If this is the case, please rename the title of the subject report and insert a map in the Figures section identifying portions of Parcel D-1 that are specifically addressed by the subject report.</p>	<p>Response 1.</p> <p>Agree. The Navy is currently completing radiological activities in Parcel D-1 as part of a second phase of work. The following changes have been made to the document to clarify that this report documents only Phase 1 of the work activities:</p> <ul style="list-style-type: none"> • Added “Phase 1” to the title and signature pages • Revised Figure 1 to differentiate between Parcel D-1 Phase 1 and Phase 2 areas
<p>Comment 2. Section 3.1.2, Unrestricted Radiological Release Criteria.</p> <p>The report makes reference to a radiation dose rate of 15 millirem per year without attribution to any authoritative source. EPA’s primary requirement for radiological cleanups is achievement of CERCLA’s acceptable risk management range of 10-4 to 10-6 risk. EPA agrees that the final status surveys summarized in this report achieve this CERCLA requirement.</p>	<p>Response 2.</p> <p>The following sentence has been added to Section 3.1.2 to clarify the reference for the 15 millirem per year: “...were ALARA. <u>Per U.S. Environmental Protection Agency (EPA; 1997), the 15 mrem/yr limit equates to approximately 3E 04 increased lifetime risk.</u> This...” The EPA, 1997 reference was also added to the references in Section 13.</p>
<p>Comment 3. Section 3.1.5, Dose and Risk Modeling.</p> <p>The Report makes reference to a “Building Occupancy” for application of the RESRAD-Build v3.3 model to building surface contamination release criteria and to the resident farmer scenario for application of the RESRAD v6.3 to soil contamination release criteria. However, it appears that the</p>	<p>Response 3.</p> <p>The values listed in Table 2 are reproduced from the <i>Final Removal Action Memorandum</i> (Navy, 2006), which describes the development of the project criteria. Section 3.1.5 describes the process used to conduct dose and risk modeling to determine dose and risk values from final status survey data. The</p>

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PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

<p>Comments from Craig Cooper Superfund Project Manager US EPA</p> <p>Comments dated: November 12, 2013</p>	
Specific Comments	Response
<p>values that are presented in Table 2 were derived from the U.S. EPA’s PRG calculator. Please revise the report to reconcile those statements with other statements in the report and with the footnotes in Table 2.</p>	<p>dose and risk modeling results, along with the comparison of sampling and survey measurements with the criteria listed in Table 2, were used to demonstrate suitability of the project areas for radiological release. No changes have been made to the text.</p>
<p>Comment 4. General Comment.</p> <p>The report does not discuss soil, debris and material disposal. Please revise the subject report to identify the final disposition of the soil, debris and other material that was removed and disposed as part of the response actions described in the subject report.</p>	<p>Response 4.</p> <p>Details regarding the final disposition of soil and debris (including quantities of remediated soil) are provided in the discussions of removal action activities for specific trenches or areas in Sections 4 through 9 of the report. Final disposal at an appropriate waste disposal facility is handled under a separate Navy contract. Waste load-out is partially still ongoing. Therefore, final disposal details were not included in this Radiological Removal Action Completion Report (Phase 1) and will instead be covered under a separate transport and disposal report. The following two sentences were added to the last paragraph of the 1.0 Introduction: <u>“The majority of transport and disposal of non-radiological waste was conducted under a separate HPNS base-wide waste disposal contract over-seen by the Navy. Waste disposal was not included as part of CTO 0006.”</u></p>

RESPONSE TO COMMENTS
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STORM DRAIN AND SANITARY SEWER REMOVAL
PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

<p>Comments from Ryan Miya, Ph.D. Senior Hazardous Substances Scientist San Francisco Peninsula Team Leader Brownfields and Environmental Restoration Program - Berkeley Department of Toxic Substances Control</p> <p>Comments dated: December 5, 2013 (received via email on December 10, 2013)</p>	
General Comments	Response
<p>Comment 1. General Comment</p> <p>Please consider modifying the document title to reflect that the current Draft Radiological RACR documents the radiological surveys and remediation that were performed only in the northern half of Parcel D-1 (Phase I) so as to differentiate it from the forthcoming Draft Radiological RACR for the southern half of Parcel D-1 (Phase II)</p>	<p>Response 1.</p> <p>Agree. The title to the subject report has been revised to reflect that only Phase 1 of the Parcel D-1 radiological remediation activities are documented.</p>
<p>Comment 2. General Comment</p> <p>The text and figures throughout the document reference Parcel D-1, but it is not clear which specific areas, buildings, and building sites are included in this Phase I work. Are those areas and features identified in the document as Parcel D-1 all within the northern portion of the parcel and Phase I work or are the discussions in this current document about Parcel D-1 in fact about Parcel D-1 features in its entirety? Clarification and delineation of the two phases of work in figures and text would be very helpful.</p>	<p>Response 2.</p> <p>Figure 1 has been revised to show Phase 1 and Phase 2 areas within Parcel D-1.</p>
<p>Comment 3.</p> <p>Please include all CDPH-EMB radiological unrestricted release recommendation (RURR) memoranda received to date on the pertinent buildings and building sites that were addressed as part of the Phase I work as an appendix to the Draft Radiological RACR.</p>	<p>Response 3.</p> <p>Agree. All RURR memoranda received to date (all areas except Gun Mole Pier which is still pending at the time of issuance of this Radiological Removal Action Completion Report, Phase I) have been attached to the report as Appendix N (Radiological Unrestricted Release</p>

RESPONSE TO COMMENTS
DRAFT RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT, RADIOLOGICAL SURVEYS OF BUILDINGS AND GROUND SURFACES, AND
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PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

<p>Comments from Ryan Miya, Ph.D. Senior Hazardous Substances Scientist San Francisco Peninsula Team Leader Brownfields and Environmental Restoration Program - Berkeley Department of Toxic Substances Control</p> <p>Comments dated: December 5, 2013 (received via email on December 10, 2013)</p>	
General Comments	Response
	<p>Recommendations for Parcel D-1 [Phase 1]). A fly sheet for the RURR memorandum for Gun Mole Pier was added as a place holder in preparation for issuance of the specific Gun Mole Pier RURR.</p>
<p>Comment 4. Section 3.2.9 - Import Fill</p> <p>The data verifying the quality of the backfill materials used should either be referenced in Table 5 (for each ESU) or provided in a separate appendix to the report (import fill). In addition, the last sentence in this section appears to be incomplete. Please correct accordingly.</p>	<p>Response 4.</p> <p>The clean import fill data have been included with the report as Appendix O. The last paragraph in Section 3.2.9 has been revised to read as follows: "... ..was identified as "Jericho" soil in the SUPRA SSSD. <u>The data for the import fill material is presented in Appendix O.</u> Table 5 identifies the specific backfill material used in each trench SU and indicates whether the import fill from an offsite source <u>was used or incorporated into</u> in addition to radiologically screened soil as the backfill material.</p>
<p>Comment 5. Section 9.1 – Backfilling and Compacting</p> <p>(a) All of the data, including non-radiological analyses, verifying the quality of the backfill materials should be included as an appendix in the report, for each ESU as well as "Jericho" soil.</p> <p>(b) Third paragraph. A brief explanation should be provided in order to explain the technical basis for not conducting a final topographic survey after backfilling and compacting completion (e.g. A final sitewide topographic survey will be done at a later time after the non-radiological portion of the remediation is completed). The same comment also applies to the identical text presented again in Section</p>	<p>Response 5.</p> <p>(a) Data for backfill soil have been provided in the individual final trench survey unit reports referenced in Appendices H through L, and in Appendix O. Please also refer to Comment 4.</p> <p>(b) Section 9.1 paragraph 3 has been revised to read as follows: "...drainage. A final topographic survey was not performed <u>upon backfill placement due to additional post-remediation activities to be performed, including final placement of crushed asphalt and eventually a durable cover under a separate Navy contract.</u> When..."</p>

RESPONSE TO COMMENTS
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PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

<p>Comments from Ryan Miya, Ph.D. Senior Hazardous Substances Scientist San Francisco Peninsula Team Leader Brownfields and Environmental Restoration Program - Berkeley Department of Toxic Substances Control</p> <p>Comments dated: December 5, 2013 (received via email on December 10, 2013)</p>	
General Comments	Response
12.2.	
<p>Comment 6. Section 9.2 – Asphalt Placement. First sentence.</p> <p>Please describe what is meant by the statement that the radiologically-cleared asphalt was “used as a final step during site restoration” as the current presentation is unclear.</p>	<p>Response 6.</p> <p>The first sentence of Section 9.2 was revised to read as follows: “<u>The final step of site restoration was placement of asphalt that was removed from the area during the removal action, radiologically cleared, and crushed.</u>”</p>
<p>Comment 7. Section 9.3 – Temporary Swale Construction.</p> <p>Please add and subsequently reference a figure that presents the location(s) and flow direction(s) of the onsite temporary swale(s).</p>	<p>Response 7.</p> <p>The requested figure has been added as Figure 6.</p>
<p>Comment 8. Section 9.4 – Demobilization.</p> <p>Please reference the location of both the pre-mobilization initial radiological surface scan survey and the demobilization scan survey. If not included, this information should be included as an appendix to the Draft Radiological RACR.</p>	<p>Response 8.</p> <p>Gamma scanning data from both the pre-mobilization and demobilization surveys were compared with instrument-specific investigation levels to identify potential contamination. The referenced surveys were performed in accordance with Shaw NRC license procedures as in-process surveys. These surveys were intended to identify above IL readings and, in some cases, data were therefore not logged and are subsequently not available for reporting.</p> <p>The text in Section 9.4 paragraph 4 has been revised to read as follows: “Data obtained from the pre-mobilization initial radiological surface scan survey were compared to the data collected during and the <u>demobilization scan survey were compared with the instrument-specific</u></p>

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PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

<p>Comments from Ryan Miya, Ph.D. Senior Hazardous Substances Scientist San Francisco Peninsula Team Leader Brownfields and Environmental Restoration Program - Berkeley Department of Toxic Substances Control</p> <p>Comments dated: December 5, 2013 (received via email on December 10, 2013)</p>	
General Comments	Response
	<p><u>investigation levels</u> to ensure that radioactive materials were not relocated or additional radioactive contamination had not been introduced to the site. <u>The evaluation</u> of scan survey data ...”</p>
<p>Comment 9. Section 12.3 – Recommendations.</p> <p>Please verify if the recommendations presented for radiological free-release are pertinent to the Phase I implementation. In addition, please clarify that the recommended radiological free-release surveys for the remaining areas within Parcel D-1 are currently taking place as a part of the Phase II implementation.</p>	<p>Response 9.</p> <p>The recommendations presented for radiological release are relevant to the Phase 1 activities only. The text has been revised to read:</p> <p>“Process radiological free-release for the following areas and sites <u>included in the Parcel D-1 Phase 1 removal activities</u>:</p> <ul style="list-style-type: none"> • Building 274 • Building 383 Area footprint • Former Building 313, 313A, and 322 Sites • GMP • South Pier • SD and SS system in WAs 24, 25, 28, 29, and 30 <p>Conduct radiological free-release surveys for remaining areas within Parcel D-1 including the NRDL site, remaining adjoining</p>

RESPONSE TO COMMENTS
DRAFT RADIOLOGICAL REMOVAL ACTION COMPLETION REPORT, RADIOLOGICAL SURVEYS OF BUILDINGS AND GROUND SURFACES, AND
STORM DRAIN AND SANITARY SEWER REMOVAL
PARCEL D-1, HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

<p>Comments from Ryan Miya, Ph.D. Senior Hazardous Substances Scientist San Francisco Peninsula Team Leader Brownfields and Environmental Restoration Program - Berkeley Department of Toxic Substances Control</p> <p>Comments dated: December 5, 2013 (received via email on December 10, 2013)</p>	
General Comments	Response
	berths and remove SD and SS systems in WA 13 (Phase 2).”
<p>Comment 10. Figure 3 – Project Schedule. This schedule should be updated accordingly.</p>	<p>Response 10. The updated final Phase 1 schedule has been included with the Final RACR.</p>
<p>Comment 11. Appendix B – Air Monitoring Report. While the current presentation provides a summary of the air monitoring sampling and laboratory methods utilized, please consider expanding the air monitoring report to include a brief summary of the results obtained over the course implementation for each analyte (TSP, Mn, Pb, PM10, and asbestos).</p>	<p>Response 11. A brief summary of the air monitoring results from air monitoring performed over the course of the project is provided in Section 3.2.1.9. No further edits were made to the text.</p>